ADVANCED MOTOR CONTROLS

ProCS™ and ProC™ Series Heat Trace Panelboards

Contents

Introduction

We offer a variety of convenient standard panel sizes, or our engineering staff can create specific design solutions based on customer needs.

Advanced Motor Controls, a Group CBS company, is a UL-508A-certified industrial control panel builder, file number E357530. Advanced Motor Controls designs and manufactures the ProCS™ and ProC™ Series heat trace control panels, which can be fabricated to meet standard or custom design solutions for specific engineering requirements. We offer a single source solution for made-to-order control panelboards — from design and assembly to full-quality acceptance testing and UL-508A Certification.

Utilizing our state-of-the-art ERP inventory management software allows us to maintain a complete inventory of products, and enables us to custom-build your panel in days not weeks. Once you enter an order with Advanced Motor Controls, you will be able to log in to our portal to view the status of your order. Our staff will work with you to meet deadline requirements for your custom control panels.

Our engineering staff can assist in the design of your panelboards to meet the most stringent UL-508A standards. We offer a variety of convenient standard panel sizes, or our engineering staff can create specific design solutions based on customer needs or manufacture from customer-supplied drawings. We are able to supply control panels in NEMA 1, 3R, 4, and 4X, 12 enclosures. Contact your Advanced Motor Controls representative to discuss your specific needs or request additional information.

System Overview

Heat Tracing can be used in a variety of industrial applications. Primarily, it maintains process temperatures for reservoirs and piping that must store or transport substances that solidify at ambient temperatures.

The electric heat tracing system is primarily composed of a power source, transformer, and the heat-tracing distribution system. Transformer and heat-tracing panel sizes are important factors in determining panelboard sizing. The transformer rating should be sized based on the operating load as well as consideration for cold circuit startup and spare capacities. The following standards can assist you in planning your heat-tracing distribution system: National Electric Code IEEE Standard 515-2011 for the "Testing, Design, Installation, and Maintenance of Electrical Resistance Trace Heating for Industrial Applications."

Heat Tracing can be used in a variety of industrial applications. Primarily, it maintains process temperatures for reservoirs and piping that must store or transport substances that solidify at ambient temperatures. Heat Trace Panelboards (HTP) monitor electrical resistance in the heat-tracing system. Typically, heat-tracing systems include electric trace heaters, support components, and other electric heating devices that are external to the Heat Trace Panelboard. When the HTP detects an impedance change, it triggers a response of the external components in the heat-tracing system.

Heat Trace Panel

Advanced Motor Controls offers the ProCS™ and ProC™ Series as economical heat-tracing control center solutions.

Advanced Motor Controls offers the ProCS™ and ProC™ Series as economical heat-tracing control center solutions. We offer both standard and custom designs to meet your heat-tracing needs. Our panelboards can be fabricated as floor- or wall-mounted enclosures. Our ProCS™ Series Heat Trace Panelboards are designed with a microprocessor-based relay that provides improved accuracy and faster alarm condition response times. Our ProC™ Series uses a standard 30mA ground fault circuit breaker. Both the ProCS™ and ProC™ options allow for an integrated main circuit breaker, main contactor, alarm relay, alarm horn, door disconnect, hand/off/auto selector switch, and push-to-test lights on the panel front. See **Figures 1 and 2** for representative images of Advanced Motor Control's Heat Trace Panelboards.

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Certifications

We are a UL-508A-certified industrial control panel builder, file number E357530

Advanced Motor Control's Heat Trace panels are built according to strict UL standards for the construction of industrial control panels. We are a UL-508A-certified industrial control panel builder, file number E357530, as well as a single-source solution from design and assembly to full-quality acceptance testing and UL-508A Certification. All equipment is functionally tested before delivery to our customers.

Heat Trace Panel Images

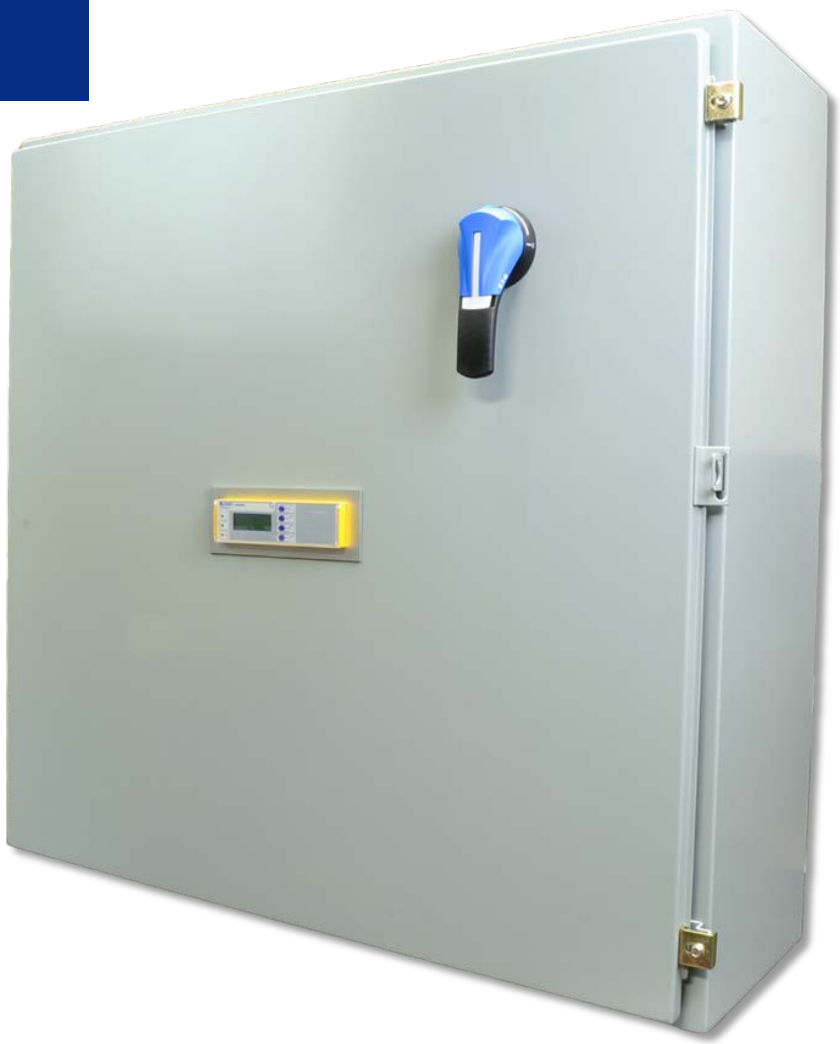

Figure 1 - Exterior view of ProCS™ with microprocessor relay

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Heat Trace Panel Images

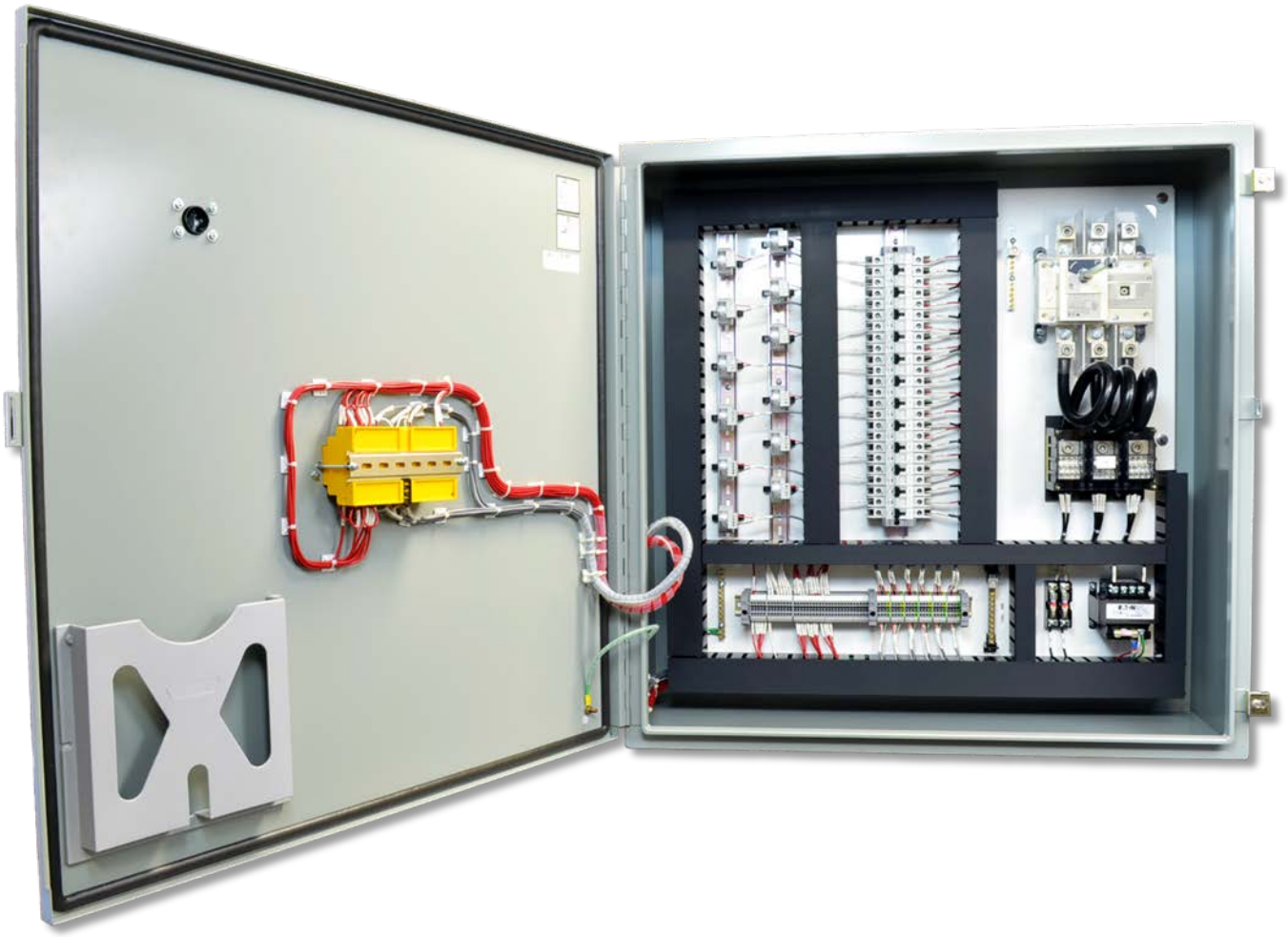

Figure 2 - Interior view of ProCS™ with microprocessor relay

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AMC Heat Trace Panel Selection Guide

1. *Determine application requirements.*
2. *Select panelboard size: standard or custom.*
3. Use panelboard cut sheet to assemble *Advanced Heat Trace Panel* catalog number.

When selecting your panelboard, we recommend consulting IEEE Standard 515-2011 for the "Testing, Design, Installation, and Maintenance of Electrical Resistance Trace Heating for Industrial Applications," which provides charts and information on determining transformer and circuit breaker sizing.

Advanced Motor Controls provides the following standard panel sizes:

- Standard bus ratings (amperage/phase) 100A, 225A, and 400A
- Panelboard distribution branch spaces in 12, 24, 36, and 42, as well as custom sizing

Selection Overview

Step 1: Determine application requirements for your Heat Trace system. IEEE Standard 515-2011, Annex G, is an excellent resource for design basics planning. The following is a list of items to take into consideration when engineering your electrical Heat Trace power distribution panel.

- Operational voltage requirement
- Number of circuit breaker types and ratings, which is necessary in determining panelboard sizing
- Panelboard size, considering the possibility for future expansion of heat-tracing system
- Type of enclosure – NEMA 1, 3R, 4, 4X, or 12
- Main disconnect requirements
- Specialty options required

Step 2: Select your panelboard. Standard panelboard options are available. See our catalog numbering system to order the proper panelboard size and options for the required application. Custom requirements for heat-tracing panelboards should be directed to an Advanced Motor Controls specialist.

Step 3: Assemble the catalog number for the required panelboard application and place your order. Refer to the ProCS™ and ProC™ panelboard catalog numbering system to create your catalog number with the specific options required for your application.

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ProCS™ and ProC™ Heat Trace Panel Catalog Number

We offer two panel types: the ProCS™ Series, which uses a microprocessor ground fault relay, and ProC™ Series, which uses a 30mA ground fault, and both come with a variety of configuration options. The chart below allows for the assembly of a catalog number that corresponds to specific panelboard construction requirements.

						*				*							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Example	**ProCS**	12	36	4X	3	*	26	1	30	*	4	2	30G	B	3	225	ADT

1. **Panel Type**
   ProC = 30mA Ground Fault HTP
   ProCS = Microprocessor Ground Fault Relay

2. **Voltage Requirements**
   12 = 120/208
   24 = 120/240
   48 = 277/480

3. **Select Panel Size 12, 24, 36, 42**
   12 = 12 Space Panelboard
   24 = 24 Space Panelboard
   36 = 36 Space Panelboard
   48 = 48 Space Panelboard
   (Use total breaker spaces needed to select size)
   1 pole breaker needs = 1 breaker space
   1 pole GFI needs = 2 breaker spaces
   2 pole needs = 2 breaker spaces
   2 pole GFI = 3 breaker spaces
   3 pole = 3 breaker spaces
   Example: (26) 1 pole 15 amp breakers = 26 spaces
   (4) 2 pole 20 amp breakers = 8 spaces
   Total breaker spaces needed = 36 spaces
   NOTE: If number is odd, round to an even number.

4. **NEMA Enclosure Type**
   1 = NEMA 1 (Indoor Use)
   3R = NEMA 3R (Indoor/Outdoor)
   4 = NEMA 4 (Indoor/Outdoor Watertight)
   4X = NEMA 4X (Indoor/Outdoor Corrosion-Resistant & Watertight)
   12 = NEMA 12 (Indoor/Outdoor Without Knockout)

5. **Select Panel Phase**
   1 = Single-phase System
   3 = Three-phase System

6. ***Use an asterisk (*)** - between each branch of same breakers

7. **Number of Like Breakers**

8. **Number of Breaker Poles**

9. **Amperage Rating of Breaker** - (Use breaker rating for number, i.e. for 30 amp breaker insert the number 30. If

10. ***Use an asterisk (*)** - between each branch of same breakers.

11. **Number of Like Breakers**

12. **Number of Breaker Poles**

13. **Amperage Rating of Breaker** - (Use breaker rating for number, i.e. for 30 amp ground fault breaker insert the number 30. If ground fault breaker, include "G" after amp rating.)

14. **Main Disconnect**
    B = Breaker
    F = Fusible Switch

15. **Number of Poles for Main Disconnect**

16. **Amperage Rating of Disconnect** - (Use disconnect rating for number, i.e. for 225 amp disconnect insert the number 225.)

17. **Options**
    N = None - Use the Letter "N" for any Unused spaces for items 1-17
    A = Individual Circuit Breaker Trip Indicator Light
    B = Alarm Beacon
    D = Door Disconnect
    E = Energized Heat Trace Light
    F = Contact Failure Heat Trace Light
    H = Alarm Horn
    L = Panel Light Power-on
    P = Prewired Terminal Blocks
    T = Thermostat & Space Heater

***Note**: All breakers of the same type should be separated by asterisks followed by:

1. Number of like breakers
2. Number of poles
3. Amperage rating

Expand panelboard number as needed to accommodate all breaker types required in HTP system.

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