HPS Imperator™ Transformers Accessories– Terminal Covers and Fuse Kits

Hammond Power Solutions

Finger-safe terminal covers

These one-piece molded terminal covers are a quick and easy way to provide safety and protection in the workplace. They protect operators from potential shock hazards and guard against accidental contact with the fuses.

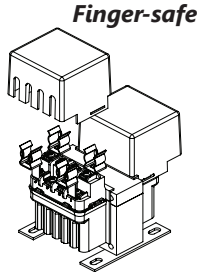
Fuse Kits

These optional primary side fuse kits contain four fuse clips, four mounting screws, and complete instructions. The table below makes it easy to choose the correct terminal covers and fuse kits for your Hammond control transformer.

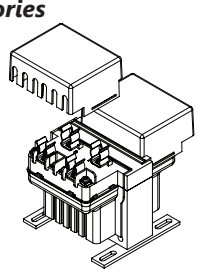
Transformer	Finger-Safe Terminal Covers				Primary Side Fuse Kits		
Part Number	*Part #*	*Pcs/Pkg*	*Price*	*Description*	*Part #*	*Pcs/Pkg*	*Price*
PH50MQMJ	*FG1*	1 cover		Finger-safe cover for MQMJ and PG series 50 VA **unfused** control transformers. Cover fits primary side or secondary side.	*PFK1*	4 fuse clips, 4 mounting screws	
	FGF1	1 cover		Finger-safe cover for MQMJ and PG series 50 VA **fused** control transformers. Cover fits primary side or secondary side.			
PH75PG *PH100MQMJ* *PH100PG*	*FG2*	1 cover		Finger-safe cover for all 75 VA, all 100 VA, PH50MLI and PH50MGJ **unfused** control transformers. Cover fits primary or secondary side.			
PH50MLI *PH50MGJ*	*FG2*	1 cover		Finger-safe cover for all 75 VA, all 100 VA, PH50MLI and PH50MGJ **unfused** control transformers. Cover fits primary or secondary side.	*PFK4*	4 fuse clips, 4 mounting screws 1 cover 1 jumper wire	
PH100MLI *PH75MGJ* *PH100MGJ*	*FG2*	1 cover		Finger-safe cover for all 75 VA, all 100 VA, PH50MLI and PH50MGJ **unfused** control transformers. Cover fits primary or secondary side.	*PFK5*	4 fuse clips, 4 mounting screws 1 cover 1 jumper wire	
PH150MGJ					*PFK6*	4 fuse clips, 4 mounting screws 1 jumper wire	
PH250MGJ							
PH750MLI					*PFK7*	4 fuse clips, 4 mounting screws 1 jumper wire	

1. Torque all terminal screws between 12 and 14 lb•in (1.36 and 1.58 N•m)
2. For all bare wire connections, the recommended wire size range is 18 AWG to 14 AWG for solid wire and 14 AWG for stranded. A ring or spade connector (maximum width 0.37in [9.4mm]) must be used if using a wire size outside the range listed above.
3. Ensure mounting screws used for transformer installation (not supplied) are properly sized for transformer weight.
4. When mounting fuse clips, remove the appropriate captive washer screw(s) from terminal block and install fuse clip(s) and new terminal screw(s).
5. Please refer to wiring instructions included with the Hammond control transformer for connection details.

Finger-safe Cover accessories

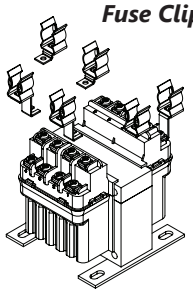


Sample Assembly Drawing for Finger Guard Installation (for 50, 75 and 100 VA)

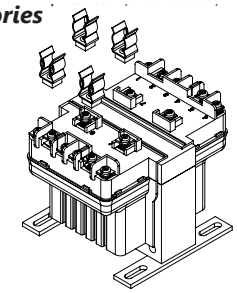


Sample Assembly Drawing for Finger Guard Installation (for 150 VA to 1500 VA)

Fuse Clips accessories



Sample Assembly Drawing for Fuse Clip Installation (for 50, 75 and 100 VA)



Sample Assembly Drawing for Fuse Clip Installation (for 150 VA to 1500 VA)

Standard secondary fuse kits utilizing 13/32in x 1 ½in fuse clips included with all transformers. Fuses are not included. (See Edison fuse section for MEN fuses.)

Recommendations for Overcurrent Protection UL and CSA (North American) Standards

UL and CSA (North American) Standards

North American standards, including UL 508, National Electric Code 450, and the Canadian Electrical Code, Part 1, require overcurrent protection on all control circuit transformers. There are two options for overcurrent protection:

Option 1 (Primary only Protection)

Provide an overcurrent device in the primary circuit rated to the current of the transformer. The overcurrent limits are as follows:

- Primary 9A or more: No more than 125% of rated current
- Primary 2 to 9A: No more than 167% of rated current
- Primary less than 2A: No more than 300% of rated current for power circuits; no more than 500% of rated current for control circuits

Note: This method is considered less desirable, as start-up inrush to the transformer can frequently surpass the current rating of the device and result in nuisance interruptions.

Option 2 (Primary and Secondary Protection)

The second option is to install overcurrent devices in both the primary and secondary circuits of the transformer. In this option, the secondary device must be rated no more than 125% of rated current of the transformer and the primary no more than 250%. The Canadian Electrical Code permits 300% overcurrent on the primary for this option.

In both options listed, it is recommended that time delay fuses be considered to avoid unnecessary interruptions.

REFERENCES:
UL 508
UL 845
NEC 430-72
NEC 450-3
CEC Part 1, 26-256

Recommendations for Overcurrent Protection UL and CSA (North American) Standards, continued

PRIMARY (UL and CSA)

To assist in the selection of fuses, the following chart recommends the maximum primary fuse rating in amperes. The first number shown is the maximum overcurrent protection when the primary current is less than 2A and the overcurrent protection device is rated for 300%. The second number (shown in brackets) is recommended when the primary is less than 2A and the overcurrent device is to be rated at 500% of rated current. Where only one number is indicated, the primary is 2A or more and one rating of overcurrent protection is shown as optimal. Choose the next higher fuse rating if these numbers do not correspond with standard fuse selections.

HCTR Current Limiting Class CC Fuses				
Part Number	*AMP Rating*	*Pcs/Pkg*	*Weight*	*Price*
HCTR-25	0.25	10/1	0.2 lb	
HCTR-5	0.5	10/1	0.2 lb	
HCTR-75	0.75	10/1	0.2 lb	
HCTR1	1	10/1	0.2 lb	
HCTR1-25	1.25	10/1	0.2 lb	
HCTR1-5	1.5	10/1	0.2 lb	
HCTR2	2	10/1	0.2 lb	
HCTR2-5	2.5	10/1	0.2 lb	
HCTR3	3	10/1	0.2 lb	
HCTR3-5	3.5	10/1	0.2 lb	
HCTR4	4	10/1	0.2 lb	
HCTR5	5	10/1	0.2 lb	
HCTR6	6	10/1	0.2 lb	
HCTR7-5	7.5	10/1	0.2 lb	
HCTR8	8	10/1	0.2 lb	
HCTR10	10	10/1	0.2 lb	
HCTR15	15	10/1	0.2 lb	
HCTR20	20	10/1	0.2 lb	
HCTR25	25	10/1	0.2 lb	
HCTR30	30	10/1	0.2 lb	

Note: See HCTR fuse catalog page for characteristic curves.

Recommended Maximum Primary Fuse Ratings in Amps Where Primary Current is less than 2A.

Primary Voltage	Overload Protection	Hammond Transformers VA RATING												
		50	*75*	*100*	*150*	*250*	*350*	*500*	*750*	*1000*	*1500*	*2000*	*3000*	*5000*
115	300%	1.25	1.8	2.5	3.5	4.0	5.0	8.0	10.0	15.0	20.0	25.0	–	–
	500%	[2.0]	[3.2]	[4.0]	[6.5]	–	–	–	–	–	–	–	–	–
120	300%	1.25	1.8	2.25	3.5	4.0	5.0	8.0	10.0	15.0	15.0	20.0	–	–
	500%	[2.0]	[3.2]	[4.0]	[6.5]	–	–	–	–	–	–	–	–	–
220	300%	0.6	1 .0	1.25	2 .0	3.2	4.5	4.0	6.0	8.0	12.0	15.0	20.0	30.0
	500%	[1.125]	[1.6]	[2.25]	[3.2]	[5.6]	[7.5]	–	–	–	–	–	–	–
208	300%	0.6	1.0	1.4	2.0	3.5	5.0	4.0	6.0	8.0	12.0	15.0	20.0	30.0
	500%	[1.125]	[1.8]	[2.25]	[3.5]	[6.0]	[8.0]	–	–	–	–	–	–	–
230	300%	0.6	0.8	1.25	1.8	3. 2	4.5	4.0	6.0	8.0	10.0	15.0	20.0	30.0
	500%	[1.0]	[1.6]	[2.0]	[3.2]	[5.0]	[7.5]	–	–	–	–	–	–	–
240	300%	0.6	0.8	1.25	1.8	3.0	4.0	3.5	5.0	7.0	10.0	15.0	15.0	30.0
	500%	[1.0]	[1.5]	[2.0]	[3.0]	[5.0]	[7.0]	–	–	–	–	–	–	–
277	300%	0.5	0.8	1.0	1.6	2.5	3.5	5.0	5.0	6.0	9.0	12.0	15.0	25.0
	500%	[0.8]	[1.25]	[1.8]	[4.5]	[6.25]	[9.0]	–	–	–	–	–	–	–
380	300%	0.3	0.5	0.75	1.125	1.8	2.5	3.5	5.6	4.5	6.25	9.0	15.0	20.0
	500%	[0.6]	[0.8]	[1.25]	[1.8]	[3.2]	[4.5]	[6.25]	[9.0]	–	–	–	–	–
440	300%	0.3	0.5	0.6	1 .0	1.6	2.25	3.2	5.0	4.0	6.0	8.0	12.0	15.0
	500%	[0.5]	[0.8]	[1.125]	[1.6]	[2.8]	[3.5]	[5.6]	[8.0]	–	–	–	–	–
460	300%	0.3	0.4	0.6	0.8	1.6	2.25	3.2	4.5	3.5	6.0	8.0	12.0	15.0
	500%	[0.5]	[0.8]	[1.0]	[1.6]	[2.5]	[3.5]	[5.0]	[8.0]	–	–	–	–	–
480	300%	0.3	0.4	0.6	0.8	1.5	2.0	3.0	4.5	3.5	5.0	7.0	10.0	15.0
	500%	[0.5]	[0.75]	[1.0]	[1.5]	[2.5]	[3.5]	[5.0]	[7.5]	–	–	–	–	–

Recommendations for Overcurrent Protection UL and CSA (North American) Standards, continued

SECONDARY

The overcurrent protection listed below, in amperes, is 125% of the rated current of the transformer. Choose the next higher fuse rating if these numbers do not correspond with standard fuse selections.

MEN General Purpose Midget Class Fuses				
Part Number	*AMP Rating*	*Pcs/Pkg*	*Weight*	*Price*
MEN-5	0.5	10/1	0.2 lb	
MEN-6	0.6	10/1	0.2 lb	
MEN1	1	10/1	0.2 lb	
MEN1-4	1.4	10/1	0.2 lb	
MEN1-5	1.5	10/1	0.2 lb	
MEN2	2	10/1	0.2 lb	
MEN2-5	2.5	10/1	0.2 lb	
MEN3	3	10/1	0.2 lb	
MEN3-5	3.5	10/1	0.2 lb	
MEN4	4	10/1	0.2 lb	
MEN5	5	10/1	0.2 lb	
MEN6	6	10/1	0.2 lb	
MEN7	7	10/1	0.2 lb	
MEN8	8	10/1	0.2 lb	
MEN10	10	10/1	0.2 lb	
MEN12	12	10/1	0.2 lb	
MEN15	15	10/1	0.2 lb	
MEN20	20	10/1	0.2 lb	
MEN25	25	10/1	0.2 lb	
MEN30	30	10/1	0.2 lb	

Note: See MEN fuse catalog page for characteristic curves.

Recommended Maximum Secondary Fuse Ratings in Amps.

Secondary Voltage	Overload Protection	Hammond Transformers VA RATING												
		50	*75*	*100*	*150*	*250*	*350*	*500*	*750*	*1000*	*1500*	*2000*	*3000*	*5000*
12	125%	5.3	7.9	11.0	16.0	27.0	–	–	–	–	–	–	–	–
24	125%	2.7	4.0	5.3	7.9	14.0	19.0	27.0	–	–	–	–	–	–
110	125%	0.6	0.9	1.2	1.8	2.9	4.0	5.7	8.6	12.0	18.0	23.0	–	–
115	125%	0.6	0.9	1.1	1.7	2.8	3.9	5.5	8.2	11.0	17.0	22.0	–	–
120	125%	0.6	0.8	1.1	1.6	2.7	3.7	5.3	7.9	11.0	16.0	21.0	–	–
220	125%	0.3	0.5	0.6	0.9	1.5	2.0	2.9	4.3	5.7	8.6	12.0	18.0	29.0
230	125%	0.3	0.5	0.6	0.9	1.4	2.0	2.8	4.1	5.5	8.2	11.0	17.0	28.0