

Control Power Transformers

Product Selection

Selecting a Control Power Transformer

For proper transformer selection, three characteristics of the load circuit must be determined in addition to the minimum voltage required to operate the circuit. These are total steady-state (sealed) VA, total inrush VA, and inrush load power factor.

- Total steady-state (sealed) VA is the volt-amperes that the transformer must deliver to the load circuit for an extended period of time — the amount of current required to hold the contact in the circuit.
- Total inrush VA is the volt amperes that the transformer must deliver upon initial energization of the control circuit. Energization of electromagnetic devices takes 30...50 milliseconds. During this inrush period, the electromagnetic control devices draw many times normal current — 3...10 times normal is typical.
- Inrush load power factor is difficult to determine without detailed vector analysis of all the load components. Such an analysis is generally not feasible. Therefore, a safe assumption is 40% power factor.

Selection Process

1. Determine the total inrush VA of the control circuits from the table below, *Typical Magnetic Motor Starter and Contactor Data 60 Hz, 120 Volt, 3-Pole*. Do not neglect the current requirements of indicating lights and other devices that do not have an inrush VA but are re-energized at the same time as the other components in the circuit. Their total VA should be added to the total inrush VA.
2. Refer to the table below, *Regulation Data — Inrush VA*. If the supply circuit voltage (Step 1) is reasonably stable and fluctuates not more than $\pm 5\%$, refer to the 90% secondary voltage column. If it fluctuates as much as $\pm 10\%$, refer to the 95% secondary voltage column. Go down the column selected until at the inrush VA closest to, but not less than, the inrush VA of the control circuit.
3. Read to the far left side of the chart. The transformer's continuous nominal VA rating is now selected. The secondary voltage that will be delivered under inrush conditions will be either 85%, 90%, or 95% of the rated secondary voltage, depending on the column selected from the table below, *Regulation Data — Inrush VA*. The total sealed VA of the control circuit must not exceed the nominal VA rating of the transformer selected from the table below, *Typical Magnetic Motor Starter and Contactor Data 60 Hz, 120 Volt, 3-Pole*.
4. Refer to the specification tables on the following pages to select a transformer according to the required continuous nominal VA, and primary and secondary voltage combinations.

Regulation Data — Inrush VA

Inrush VA at 40% Power Factor				Power Factor Adjustments	
Nominal VA Rating	85%	90%	95%	Power Factor	Multiply By
50	158	139	116	100%	0.63
75	242	213	177	90%	0.65
100	346	302	249	80%	0.70
150	528	461	379	70%	0.75
200	869	743	585	60%	0.82
250	1057	904	719	50%	0.90
300	1418	1200	937	40%	1.00
500	2681	2221	1648	20%	1.27
750	4560	3718	2700	10%	1.45
1000	7568	6118	4185	—	—
1500	15724	12423	8203	—	—
2000	16941	13660	9484	—	—
3000	25680	20180	13797	—	—

Transformers without Fusing Block/Clip

Continuous VA	Primary — 600/575/550V (60 Hz)	Primary — 120x240V (60 Hz)
	Cat. No.	Cat. No.
100	1497B-A3-M11-0-N	1497B-A3-M12-0-N
200	1497B-A5-M11-0-N	1497B-A5-M12-0-N
300	1497B-A7-M11-0-N	1497B-A7-M12-0-N
500	1497B-A9-M11-0-N	1497B-A9-M12-0-N
750	—	1497B-A10-M12-0-N
1000	1497B-A11-M11-0-N	1497B-A11-M12-0-N
2000	1497B-A13-M11-0-N	1497B-A13-M12-0-N
3000	1497B-A14-M11-0-N	1497B-A14-M12-0-N

Continuous VA	Primary — 120x240V (60 Hz)	Primary — 240x480V (60 Hz)	Primary — 208/240V (60 Hz)
	Cat. No.	Cat. No.	Cat. No.
50	1497B-A1-M13-0-N	1497B-A1-M16-0-N	1497B-A1-M17-0-N
75	1497B-A2-M13-0-N	—	—
100	1497B-A3-M13-0-N	1497B-A3-M16-0-N	1497B-A3-M17-0-N
150	1497B-A4-M13-0-N	1497B-A4-M16-0-N	1497B-A4-M17-0-N
200	1497B-A5-M13-0-N	—	—
250	1497B-A6-M13-0-N	1497B-A6-M16-0-N	1497B-A6-M17-0-N
300	1497B-A7-M13-0-N	—	—

Continuous VA	Primary — 240x480V (60 Hz)	Primary — 380/400/416V (60 Hz)
	Cat. No.	Cat. No.
100	1497B-A3-M14-0-N	—
150	1497B-A4-M14-0-N	—
200	1497B-A6-M14-0-N	—
500	1497B-A9-M14-0-N	1497B-A9-M15-0-N
750	1497B-A10-M14-0-N	1497B-A10-M15-0-N
1000	1497B-A11-M14-0-N	1497B-A11-M15-0-N
1500	1497B-A12-M14-0-N	1497B-A12-M15-0-N
2000	1497B-A13-M14-0-N	1497B-A13-M15-0-N
3000	1497B-A14-M14-0-N	1497B-A14-M15-0-N

‡ No secondary fusing available



Bulletin 1497B — Control Power Transformers

Bulletin 1497B Control Power Transformers are designed to reduce supply voltages to control circuits. The complete line of transformers is available with optional factory-installed or panel-mount primary and secondary fuse block.

- 50...3000VA (60 Hz)
- RoHS compliant
- Single phase
- Epoxy encapsulated

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Standards Compliance

UL 5085-1, UL 5085-2
 CSA C22.2 No. 66.1

Certifications

cULus Listed (File No. E52057;
 Guide No. XPTQ, XPTQ7)

Catalog Number Explanation

Bulletin 1497B Control Power Transformers

1497B – A3 – M11 – 0 – N
a
b
c
d

VA Rating	
Code	Description [VA]
A1	50
A2	75
A3	100
A4	150
A5	200
A6	250
A7	300
A9	500
A10	750
A11	1000
A12	1500
A13	2000
A14	3000

Primary and Secondary Voltage		
Code	Primary	Secondary
M11	600/575/550V	120X240V (60 Hz)
M12	120X240V	120X240V (60 Hz)
M13	120X240V	24V (60 Hz)
M14	240X480V	120X240V (60 Hz)
M15	380/400/416V	115X230V (60 Hz)
M16	240X480V	24V (60 Hz)
M17	208/240V	24V (60 Hz)

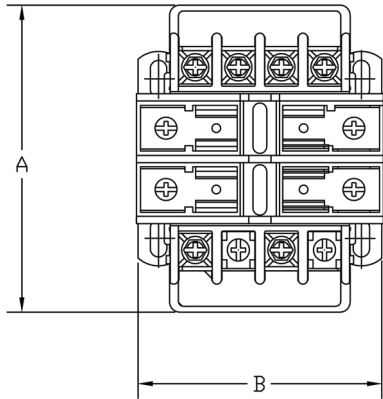
Fuse Block Options*	
Code	Block Options
0	0 Primary, 0 Secondary
1	0 Primary, 1 Secondary
2	2 Primary, 0 Secondary
3	2 Primary, 1 Secondary

Factory Installed Options	
Code	Description
N	No Taps

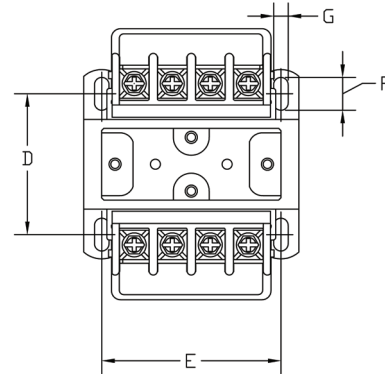
Note: For complete list of valid transformer configurations, see Product Selection.

* Transformers rated 350VA and below use secondary fuse clips. Transformers rated 500VA and above use secondary fuse blocks.

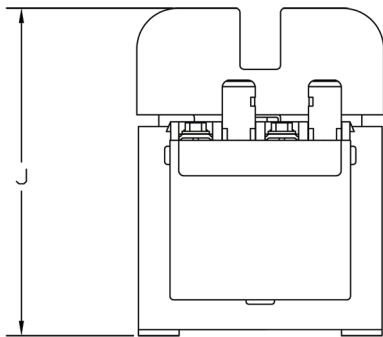
Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.



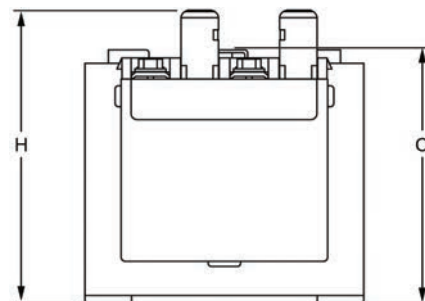
Transformer with 2 Primary Fuse Blocks and 0 or 1 Secondary Fuse Block/Clip
 (Top View)



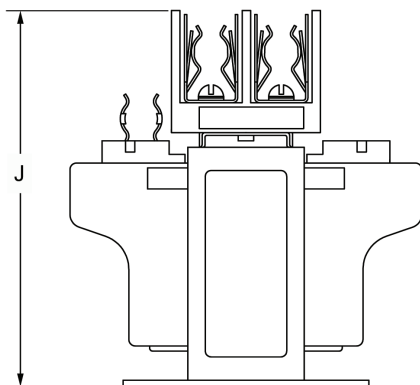
Transformer with 0 Primary Fuse Blocks and 0 or 1 Secondary Fuse Block/Clip
 (Top View)



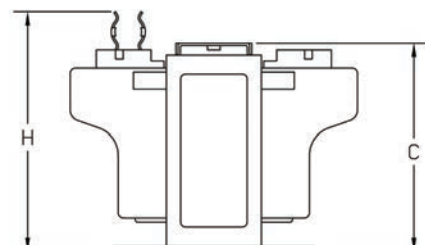
Transformer with 2 Primary Fuse Blocks and 1 Secondary Fuse Block/Clip
 (Side View)



Transformer with 0 Primary Fuse Block and 1 Secondary Fuse Block/Clip
 (Side View)



Transformer with 2 Primary Fuse Blocks and 1 Secondary Fuse Block/Clip
 (Side View)



Transformer with 0 Primary Fuse Blocks and 1 Secondary Fuse Clip
 (Side View)

Control Power Transformers

Approximate Dimensions

VA	Cat. No.	A	B	C	D	E	F	G	H	J	Approx. Shipping Wt. lb (kg)
50	1497B-A1-M13-0-N	3-25/32 (96)	3 (76)	2-23/32 (69)	1-31/32 (50)	2-1/2 (64)	15/32 (12)	1/5 (5)	3-9/64 (80)	4-1/32 (102)	3 (1.4)
	1497B-A1-M16-0-N										
	1497B-A1-M17-0-N										
75	1497B-A2-M13-0-N	4-1/32 (102)	3 (76)	2-23/32 (69)	2-27/64 (61)	2-1/2 (64)	15/32 (12)	1/5 (5)	3-9/64 (80)	4-1/32 (102)	4 (1.8)
100	1497B-A3-M11-0-N	4-1/16 (103)	3-3/4 (95)	3-23/64 (85)	2-13/32 (61)	3-1/8 (80)	15/32 (12)	1/5 (5)	3-49/64 (96)	4-21/32 (118)	5 (2.3)
	1497B-A3-M12-0-N	4 (102)	3-3/8 (86)	3-3/64 (77)	2-27/64 (61)	2-13/16 (71)			3-15/32 (88)	4-23/64 (110)	
	1497B-A3-M13-0-N										
	1497B-A3-M14-0-N										
	1497B-A3-M16-0-N										
	1497B-A3-M17-0-N										
150	1497B-A4-M13-0-N	4-1/16 (103)	3-3/4 (95)	3-23/64 (85)	2-13/16 (71)	3-5/16 (80)	15/32 (12)	1/5 (5)	3-49/64 (96)	4-21/32 (118)	6 (2.7)
	1497B-A4-M14-0-N										
	1497B-A4-M16-0-N										
	1497B-A4-M17-0-N										
200	1497B-A5-M11-0-N	4-3/8 (111)	4-1/2 (114)	3-31/32 (101)	2-5/8 (67)	3-3/4 (95)	15/32 (12)	1/5 (5)	4-2/5 (112)	5-9/32 (134)	10 (4.5)
	1497B-A5-M12-0-N										
	1497B-A5-M13-0-N										
250	1497B-A6-M13-0-N	4-3/8 (111)	4-1/2 (114)	3-31/32 (101)	2-53/64 (72)	3-3/4 (95)	15/32 (12)	1/5 (5)	4-2/5 (112)	5-9/32 (134)	10 (4.5)
	1497B-A6-M14-0-N										
	1497B-A6-M16-0-N										
	1497B-A6-M17-0-N										
300	1497B-A7-M11-0-N	4-3/4 (120)	4-1/2 (114)	3-31/32 (101)	3-3/16 (81)	3-3/4 (95)	15/32 (12)	1/5 (5)	4-2/5 (112)	5-9/32 (134)	12 (5.4)
	1497B-A7-M12-0-N										
	1497B-A7-M13-0-N										
500	1497B-A9-M11-0-N	6-7/64 (155)	5-1/4 (133)	4-5/8 (118)	3-7/8 (98)	4-3/8 (111)	1-1/16 (27)	5/16 (8)	—	5-15/16 (151)	18 (8.2)
	1497B-A9-M12-0-N										
	1497B-A9-M14-0-N										
	1497B-A9-M15-0-N										
750	1497B-A10-M12-0-N	7-39/64 (193)	5-1/4 (133)	4-5/8 (118)	5-7/8 (149)	4-3/8 (111)	1-1/16 (27)	5/16 (8)	—	5-15/16 (151)	28 (12.7)
	1497B-A10-M14-0-N										
	1497B-A10-M15-0-N										
1000	1497B-A11-M11-0-N	7-7/64 (181)	6-3/4 (171)	5-55/64 (149)	4-31/32 (126)	6-1/8 (155)	9/10 (23)	5/16 (8)	—	7-3/16 (183)	40 (18.1)
	1497B-A11-M12-0-N										
	1497B-A11-M14-0-N										
	1497B-A11-M15-0-N										41 (18.6)
1500	1497B-A12-M14-0-N	8-7/64 (206)	6-3/4 (171)	5-55/64 (149)	6-1/8 (155)	6-1/8 (155)	7/8 (22)	5/16 (8)	—	7-3/16 (183)	53 (24)
	1497B-A12-M15-0-N										
2000	1497B-A13-M11-0-N	8-7/64 (206)	6-3/4 (171)	5-55/64 (149)	6-1/8 (155)	6-1/8 (155)	7/8 (22)	5/16 (8)	—	7-3/16 (183)	61 (27.7)
	1497B-A13-M12-0-N										
	1497B-A13-M14-0-N	9 (229)									53 (24)
	1497B-A13-M15-0-N	8-7/64 (206)									
3000	1497B-A14-M11-0-N	8-9/16 (217)	9 (229)	7-41/64 (194)	5-13/16 (148)	7-1/2 (191)	9/10 (23)	7/16 (11)	—	8-61/64 (227)	78 (35.4)
	1497B-A14-M12-0-N										
	1497B-A14-M14-0-N										
	1497B-A14-M15-0-N										