

## Class MT

### Features

- ▶ Epoxy-encapsulated (50–750VA); epoxy resin impregnated (1.0–5.0 KVA). Completely seals the transformer coils against moisture, dust, dirt and industrial contaminants for maximum protection in hostile and industrial environments.
- ▶ Fuse clips (most models). Factory mounted for integral fusing on the secondary side to save panel space, save wiring time and save the cost of buying an add-on fuse block or kit.
- ▶ Integrally molded barriers. Between terminals and transformer, protect against electrical creepage. Up to 30% greater terminal contact area permits low-loss connections. Extra-deep barriers reduce the chance of shorts from frayed leads or careless wiring.
- ▶ Terminals. Molded into the transformer, are difficult to break during wiring. A full quarter-inch of thread on the 10-32 terminal screws prevents stripping and pullout.
- ▶ Jumpers supplied. Two jumper links are standard with all transformers which can be jumpered.

### Operation

Industrial control circuits and motor control loads typically require more current when they are initially energized than under normal operating conditions. This period of high current demand, referred to as inrush, may be as great as ten times the current required under steady state (normal) operating conditions, and can last up to 40 milliseconds. A transformer in a circuit subject to inrush will typically attempt to provide the load with the required current during the inrush period. However, it will be at the expense of the secondary voltage stability by allowing the voltage to the load to decrease as the current increases. This period of secondary voltage instability, resulting from increased current, can be of such magnitude that the transformer is unable to supply sufficient voltage to energize the load. The transformer must therefore be designed and constructed to accommodate the high inrush current, while maintaining secondary voltage stability. According to NEMA standards, the secondary voltage would typically be at 85% of the rated voltage.



Industrial Control Circuit Transformers are specifically designed and built to provide adequate voltage to the load while accommodating the high current levels present at inrush. These transformers deliver excellent secondary voltage regulation and meet or exceed the standards established by NEMA, ANSI, UL and CSA. Their rugged construction and excellent electrical characteristics ensure reliable operation of electromagnetic devices and trouble-free performance.

### Specifications

- Laminations are built with silicon steel to minimize core losses and to increase optimum performance and efficiency.
- Copper magnet wire of the highest quality assures efficient operation.
- Factory mounted type “K” fuse clips are standard on all secondary transformers.
- Two jumper links are standard with all transformers which can be jumpered.
- UL listed and CSA certified.
- 50/60 Hz rated.

- Insulation materials are of the highest rating available for the temperature class.
- Mounting brackets are heavy gauge steel to add strength to core construction and provide stable mounting. Slotted mounting feet permit easy installation.
- Attractive black finish; easy-to-read nameplate with complete rating data and wiring diagram.
- Class 105°C (221°F) insulation system. 55°C (131°F) temperature rise.
- Optional field mounted 2-pole primary Class CC fuse block is available.

For transformers that meet IEC, VDE, and other international standards contact your local Siemens sales office.

## Class MT

### Transformer Selection Process

Selecting a transformer for industrial control circuit applications requires knowledge of the following terms:

**Inrush VA** is the product of load voltage (V) multiplied by the current (A) that is required during circuit start-up. It is calculated by adding the inrush VA requirements of all devices (contactors, timers, relays, pilot lights, solenoids, etc.), which will be energized together. Inrush VA requirements are best obtained from the component manufacturer.

**Sealed VA** is the product of load voltage (V) multiplied by the current (A) that is required to operate the circuit after initial start-up or under normal operating conditions. It is calculated by adding the sealed VA requirements of all electrical components of the circuit that will be energized at any given time. Sealed VA requirements are best obtained from the component manufacturer. Sealed VA is also referred to as steady state VA.

**Primary Voltage** is the voltage available from the electrical distribution system and its operational frequency, which is connected to the transformer supply voltage terminals.

**Secondary Voltage** is the voltage required for load operation which is connected to the transformer load voltage terminals.



Fuse Clip Kit KCCFPX2R

### Primary Fuse Kit

In addition to factory installed secondary fusing, Siemens offers a primary fuse kit for class MT transformers Size 50–750 VA for field installation. The primary fuse kit includes a 2-pole class CC fuse block, instructions and all associated mounting and wiring hardware. Additionally, this fuse kit will fit most competitors' units. To order this kit, use catalog number **KCCFPX2R**. The primary fuse kit, when installed, will add a maximum of 0.69 in. (18 mm) to the transformer "A" dimension and 1.94 in. (49 mm) to the "C" dimension. List Price **\$16.70**

Once the circuit variables have been determined, transformer selection is a simple 5-step process as follows:

**1. Determine the Application Inrush VA** by using the following industry accepted formula:

$$\text{Application Inrush VA} = \sqrt{(\text{Inrush VA})^2 + (\text{Sealed VA})^2}$$

**2. Refer to the Regulation Chart.** If the primary voltage is basically stable and does not vary by more than 5% from nominal, the 90% secondary voltage column should be used. If the primary voltage varies between 5% and 10% of nominal, the 95% secondary voltage column should be used.

**3. After determining the proper secondary voltage column**, read down until a value equal to or greater than the Application Inrush VA is found. In no case should a figure less than the Application Inrush VA be used.

**4. Read left to the Transformer VA Rating column** to determine the proper transformer for this application. As a final check, make sure that the Transformer VA Rating is equal to or greater than the total sealed requirements. If not, select a transformer with a VA rating equal to or greater than the total sealed VA.

**5. Refer to the following pages** to determine the proper **catalog number** based on the transformer VA, and primary and secondary voltage requirements.

### Regulation Chart Data

Transformer VA Rating	Inrush VA at 20% Power Factor		
	95% Secondary Voltage	90% Secondary Voltage	85% Secondary Voltage
25	100	130	150
50	170	200	240
75	310	410	540
100	370	540	730
150	780	930	1150
200	810	1150	1450
250	1400	1900	2300
300	1900	2700	3850
500	4000	5300	7000
750	8300	11000	14000
1000	9000	13000	18500
1500	10500	15000	20500
2000	17000	25500	34000
3000	24000	36000	47500
5000	55000	92500	115000

To comply with NEMA standards, which require all magnetic devices to operate successfully at 85% of rated voltage, the 90% secondary voltage column is most often used in selecting a transformer.

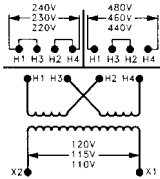


Primary Fuse Kit Installation—Class MT Transformer with Primary Fuse Kit, KCCFPX2R



## Class MT

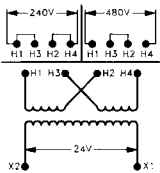
Primary Volts 240 × 480, 230 × 460, 220 × 440 50/60Hz  
Secondary Volts 120/115/110



VA Rating	Catalog No	Output Amps	Dimensions Inches (mm)					Mounting Slots	Approx Ship Wt Lbs (Kg)	Price \$
			A	B	C	D	E			
50	MT0050A	0.43	3.00 (76)	3.00 (76)	2.56 (65)	2.00 (51)	2.50 (64)	1/4 (5) × 3/8 (10)	2.6 (1)	41.50
75	MT0075A	0.65	3.50 (89)	3.00 (76)	2.56 (65)	2.50 (64)	2.50 (64)	1/4 (5) × 3/8 (10)	3.5 (2)	49.00
100	MT0100A	0.87	3.38 (86)	3.38 (86)	2.56 (65)	2.38 (60)	2.81 (71)	1/4 (5) × 3/8 (10)	4.2 (2)	55.00
150	MT0150A	1.30	4.00 (102)	3.75 (95)	3.19 (81)	2.88 (73)	3.13 (79)	1/4 (5) × 3/8 (10)	6.7 (3)	59.00
200	MT0200A	1.74	4.00 (102)	4.50 (114)	3.81 (97)	2.50 (64)	3.75 (95)	1/4 (5) × 3/8 (10)	8.5 (4)	73.00
250	MT0250A	2.17	4.38 (111)	4.50 (114)	3.81 (97)	2.88 (73)	3.75 (95)	1/4 (5) × 3/8 (10)	10.0 (5)	85.00
300	MT0300A	2.61	4.75 (121)	4.50 (114)	3.81 (97)	3.25 (83)	3.75 (95)	1/4 (5) × 3/8 (10)	11.3 (5)	94.00
350	MT0350A	3.04	5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	1/4 (5) × 3/8 (10)	13.6 (6)	101.00
500	MT0500A	4.35	5.50 (140)	5.25 (133)	4.75 (121)	4.25 (108)	4.38 (111)	5/16 (8) × 1/2 (17)	19.2 (9)	124.00
750	MT0750A	6.52	7.00 (178)	5.25 (133)	4.75 (121)	5.75 (146)	4.38 (111)	5/16 (8) × 1/2 (17)	28.1 (13)	172.00
1000	MT1000A	8.70	7.50 (191)	5.25 (133)	4.44 (113)	5.50 (140)	4.38 (111)	5/32 (7) × 1/2 (17)	29.8 (14)	209.00
1500	MT1500A	13.04	6.75 (171)	6.75 (171)	5.69 (144)	3.56 (90)	6.06 (154)	7/32 (7) × 1/2 (17)	30.0 (14)	297.00
2000	MT2000A	17.39	7.00 (178)	6.75 (171)	5.69 (144)	4.44 (113)	6.06 (154)	7/32 (7) × 1/2 (17)	38.0 (17)	362.00
3000	MT3000A	26.09	7.50 (191)	9.00 (229)	7.56 (192)	4.04 (103)	6.50 (165)	1/2 (11) × 3/4 (19)	53.0 (24)	503.00
5000	MT5000A	43.48	7.75 (197)	9.00 (229)	7.56 (192)	6.00 (152)	6.50 (165)	1/2 (11) × 3/4 (19)	89.0 (40)	845.00

Includes secondary fuse clip on Sizes 50 through 750VA.ⓐ

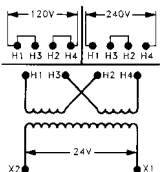
Primary Volts 240 × 480 50/60Hz  
Secondary Volts 24



VA Rating	Catalog No	Output Amps	Dimensions Inches (mm)					Mounting Slots	Approx Ship Wt Lbs (Kg)	Price \$
			A	B	C	D	E			
50	MT0050B	2.08	3.00 (76)	3.00 (76)	2.56 (65)	2.00 (51)	2.50 (64)	1/4 (5) × 3/8 (10)	2.7 (1)	48.00
75	MT0075B	3.13	3.50 (89)	3.00 (76)	2.56 (65)	2.50 (64)	2.50 (64)	1/4 (5) × 3/8 (10)	3.5 (2)	58.00
100	MT0100B	4.17	3.38 (86)	3.38 (86)	2.88 (73)	2.38 (60)	2.81 (71)	1/4 (5) × 3/8 (10)	4.2 (2)	64.00
150	MT0150B	6.25	4.00 (102)	3.75 (95)	3.20 (82)	2.88 (73)	3.13 (79)	1/4 (5) × 3/8 (10)	6.7 (3)	82.00
200	MT0200B	8.33	4.00 (102)	4.50 (114)	3.81 (97)	2.50 (64)	3.75 (95)	1/4 (5) × 3/8 (10)	8.5 (4)	103.00
250	MT0250B	10.42	4.38 (111)	4.50 (114)	3.81 (97)	2.88 (73)	3.75 (95)	1/4 (5) × 3/8 (10)	10.1 (5)	122.00
300	MT0300B	12.50	4.75 (121)	4.50 (114)	3.81 (97)	3.25 (83)	3.75 (95)	1/4 (5) × 3/8 (10)	11.4 (5)	128.00
350	MT0350B	14.58	5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	1/4 (5) × 3/8 (10)	13.4 (6)	134.00
500	MT0500B	20.83	5.13 (130)	5.25 (133)	4.75 (121)	4.13 (105)	4.38 (111)	5/16 (8) × 1/2 (17)	17.5 (8)	168.00
750	MT0750B	31.25	7.00 (178)	5.25 (133)	4.75 (121)	5.75 (146)	4.38 (111)	5/16 (8) × 1/2 (17)	28.1 (13)	193.00

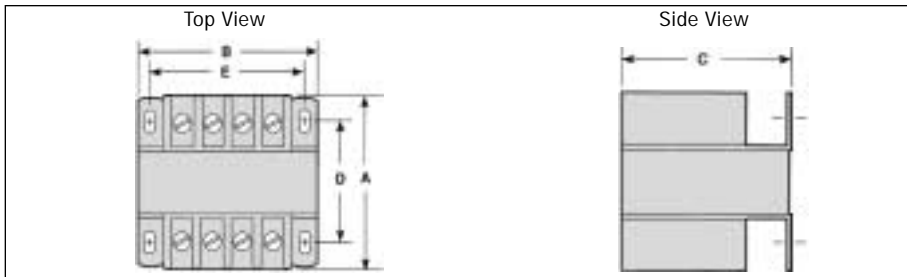
Includes secondary fuse clip on Sizes 50 through 500VA.ⓐ

Primary Volts 120 × 240 50/60Hz  
Secondary Volts 24



VA Rating	Catalog No	Output Amps	Dimensions Inches (mm)					Mounting Slots	Approx Ship Wt Lbs (Kg)	Price \$
			A	B	C	D	E			
50	MT0050C	2.08	3.00 (76)	3.00 (76)	2.56 (65)	2.00 (51)	2.50 (64)	1/4 (5) × 3/8 (10)	2.6 (1)	48.00
75	MT0075C	3.13	3.50 (89)	3.00 (76)	2.56 (65)	2.50 (64)	2.50 (64)	1/4 (5) × 3/8 (10)	3.6 (2)	58.00
100	MT0100C	4.17	3.38 (86)	3.38 (86)	2.88 (73)	2.38 (60)	2.81 (71)	1/4 (5) × 3/8 (10)	4.4 (2)	64.00
150	MT0150C	6.25	4.00 (102)	3.75 (95)	3.20 (82)	2.88 (73)	3.13 (79)	1/4 (5) × 3/8 (10)	6.7 (3)	82.00
200	MT0200C	8.33	4.00 (102)	4.50 (114)	3.81 (97)	2.50 (64)	3.75 (95)	1/4 (5) × 3/8 (10)	8.5 (4)	103.00
250	MT0250C	10.42	4.38 (111)	4.50 (114)	3.81 (97)	2.88 (73)	3.75 (95)	1/4 (5) × 3/8 (10)	10.1 (5)	122.00
300	MT0300C	12.50	4.75 (121)	4.50 (114)	3.81 (97)	3.25 (83)	3.75 (95)	1/4 (5) × 3/8 (10)	11.4 (5)	128.00
350	MT0350C	14.58	5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	1/4 (5) × 3/8 (10)	13.4 (6)	134.00
500	MT0500C	20.83	5.38 (137)	5.25 (133)	4.75 (121)	4.13 (105)	4.38 (111)	5/16 (8) × 1/2 (17)	17.5 (8)	168.00

Includes secondary fuse clip on Sizes 50 through 500VA.ⓐ



Note: Dimensions for reference, not for construction. Dimensions in inches (mm).

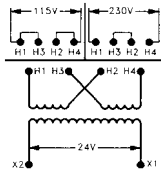
**Dimension "C" does not include the added height required for secondary fuse clips—0.50 in. (13 mm) maximum for type "K" clips.**

The Primary Fuse Kit, when installed, will add a maximum of 0.69 in. (18 mm) to the transformer "A" dimension and 1.94 in. (49 mm) to the "C" dimension.

ⓐ 2-pole Primary Class CC Fuse Kit is available for field installation. See page 729 for details. Catalog Number KCCFPX2R—\$16.70 list price.

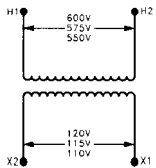
## Class MT

		Primary Volts 115 × 230 50/60Hz Secondary Volts 24		Dimensions Inches (mm)						Approx Ship Wt Lbs (Kg)	Price \$
VA Rating	Catalog No	Output Amps	A	B	C	D	E	Mounting Slots			
50	MT0050D	2.08	3.00 (76)	3.00 (76)	2.56 (65)	2.00 (51)	2.50 (64)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	2.7 (1)	48.	
75	MT0075D	3.13	3.50 (89)	3.00 (76)	2.56 (65)	2.50 (64)	2.50 (64)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	3.7 (2)	58.	
100	MT0100D	4.17	3.38 (86)	3.38 (86)	2.88 (73)	2.38 (60)	2.81 (71)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	4.3 (2)	64.	
150	MT0150D	6.25	4.00 (102)	3.75 (95)	3.19 (81)	2.88 (73)	3.13 (79)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	6.8 (3)	82.	
200	MT0200D	8.33	4.00 (102)	4.50 (114)	3.81 (97)	2.50 (64)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	8.5 (4)	103.	
250	MT0250D	10.42	4.38 (111)	4.50 (114)	3.81 (97)	2.88 (73)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	10.1 (5)	122.	
300	MT0300D	12.50	4.75 (121)	4.50 (114)	3.81 (97)	3.25 (83)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	11.4 (5)	128.	
350	MT0350D	14.58	5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	13.4 (6)	134.	
500	MT0500D	20.83	5.38 (137)	5.25 (133)	4.75 (121)	4.13 (105)	4.38 (111)	5 <sup>1</sup> / <sub>16</sub> (8) × 1 <sup>1</sup> / <sub>16</sub> (17)	17.5 (8)	168.	



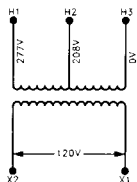
Includes secondary fuse clip on Sizes 50 through 500VA.Ⓞ

		Primary Volts 550/575/600 50/60Hz Secondary Volts 110/115/120		Dimensions Inches (mm)						Approx Ship Wt Lbs (Kg)	Price \$
VA Rating	Catalog No	Output Amps	A	B	C	D	E	Mounting Slots			
50	MT0050E	0.43	3.00 (76)	3.00 (76)	2.56 (65)	2.00 (51)	2.50 (64)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	2.7 (1)	48.	
75	MT0075E	0.65	3.50 (89)	3.00 (76)	2.56 (65)	2.50 (64)	2.50 (64)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	3.6 (2)	56.	
100	MT0100E	0.87	3.38 (86)	3.38 (86)	2.88 (73)	2.38 (60)	2.81 (71)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	4.2 (2)	59.	
150	MT0150E	1.30	4.00 (102)	3.75 (95)	3.19 (81)	2.88 (73)	3.13 (79)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	6.8 (3)	70.	
200	MT0200E	1.74	4.00 (102)	4.50 (114)	3.81 (97)	2.50 (64)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	8.4 (4)	87.	
250	MT0250E	2.17	4.38 (111)	4.50 (114)	3.81 (97)	2.88 (73)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	10.0 (5)	108.	
300	MT0300E	2.61	4.75 (121)	4.50 (114)	3.81 (97)	3.25 (83)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	11.3 (5)	128.	
350	MT0350E	3.04	5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	13.6 (6)	137.	
500	MT0500E	4.35	5.38 (137)	5.25 (133)	4.75 (121)	4.13 (105)	4.38 (111)	5 <sup>1</sup> / <sub>16</sub> (8) × 1 <sup>1</sup> / <sub>16</sub> (17)	16.8 (8)	146.	
750	MT0750E	6.52	7.00 (178)	5.25 (133)	4.75 (121)	5.75 (146)	4.38 (111)	5 <sup>1</sup> / <sub>16</sub> (8) × 1 <sup>1</sup> / <sub>16</sub> (17)	25.7 (12)	166.	

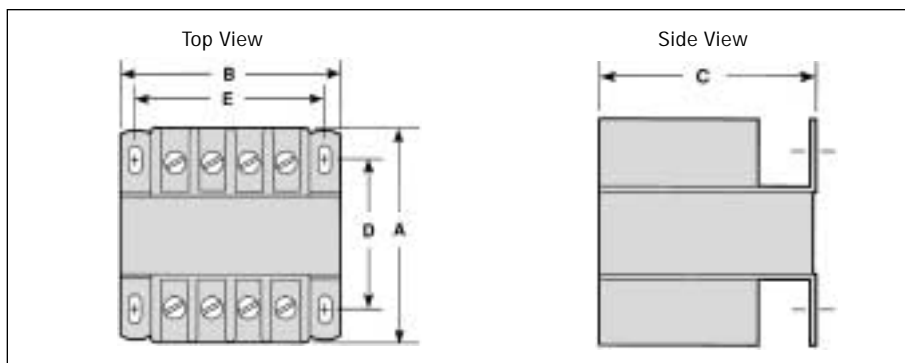


Includes secondary fuse clip on Sizes 50 through 750VA.Ⓞ

		Primary Volts 208/277 50/60Hz Secondary Volts 120		Dimensions Inches (mm)						Approx Ship Wt Lbs (Kg)	Price \$
VA Rating	Catalog No	Output Amps	A	B	C	D	E	Mounting Slots			
50	MT0050F	0.42	3.00 (76)	3.00 (76)	2.56 (65)	2.00 (51)	2.50 (64)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	2.9 (1)	48.	
75	MT0075F	0.63	3.50 (89)	3.00 (76)	2.56 (65)	2.50 (64)	2.50 (64)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	3.8 (2)	51.	
100	MT0100F	0.83	3.38 (86)	3.38 (86)	2.88 (73)	2.38 (60)	2.81 (71)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	4.5 (2)	59.	
150	MT0150F	1.25	4.00 (102)	3.75 (95)	3.19 (81)	2.88 (73)	3.13 (79)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	6.9 (3)	70.	
200	MT0200F	1.67	4.00 (102)	4.50 (114)	3.81 (97)	2.50 (64)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	8.7 (4)	87.	
250	MT0250F	2.08	4.38 (111)	4.50 (114)	3.81 (97)	2.88 (73)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	10.2 (5)	108.	
300	MT0300F	2.50	4.75 (121)	4.50 (114)	3.81 (97)	3.25 (83)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	11.4 (5)	128.	
350	MT0350F	2.92	5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	13.7 (6)	135.	
500	MT0500F	4.17	5.38 (137)	5.25 (133)	4.75 (121)	4.13 (105)	4.38 (111)	5 <sup>1</sup> / <sub>16</sub> (8) × 1 <sup>1</sup> / <sub>16</sub> (17)	17.2 (8)	146.	
750	MT0750F	6.25	7.00 (178)	5.25 (133)	4.75 (121)	5.75 (146)	4.38 (111)	5 <sup>1</sup> / <sub>16</sub> (8) × 1 <sup>1</sup> / <sub>16</sub> (17)	25.7 (12)	154.	



Includes secondary fuse clip on Sizes 50 through 750VA.Ⓞ



Note: Dimensions for reference, not for construction. Dimensions in inches (mm).

**Dimension "C" does not include the added height required for secondary fuse clips—0.50 in. (13 mm) maximum for type "K" clips.**

The Primary Fuse Kit, when installed, will add a maximum of 0.69 in. (18 mm) to the transformer "A" dimension and 1.94 in. (49 mm) to the "C" dimension.

ⓄA 2-pole Primary Class CC Fuse Block Kit is available for field installation. See page 729 for details. Catalog Number KCCFPX2R—\$16.70 list price.

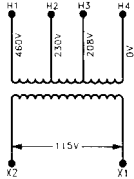


# Industrial Control Circuit Transformers

Selection

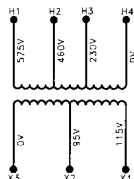
Class MT

Primary Volts 208/230/460 50/60Hz Secondary Volts 115											
VA Rating	Catalog No	Output Amps		Dimensions Inches (mm)					Mounting Slots	Approx Ship Wt Lbs (Kg)	Price \$
				A	B	C	D	E			
50	MT0050G	0.43		3.13 (79)	3.00 (76)	2.56 (65)	2.13 (54)	2.50 (64)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	2.8 (1)	67.
75	MT0075G	0.65		3.38 (86)	3.38 (86)	2.88 (73)	2.38 (60)	2.81 (71)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	4.3 (2)	71.
100	MT0100G	0.87		3.69 (94)	3.38 (86)	2.88 (73)	2.69 (68)	2.81 (71)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	4.9 (2)	75.
150	MT0150G	1.30		4.19 (106)	3.75 (95)	3.19 (81)	3.06 (78)	3.13 (79)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	7.4 (3)	97.
200	MT0200G	1.74		4.25 (108)	4.50 (114)	3.81 (97)	2.75 (70)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	9.4 (4)	125.
250	MT0250G	2.17		4.75 (121)	4.50 (114)	3.81 (97)	3.25 (83)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	11.1 (5)	132.
300	MT0300G	2.61		5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	13.6 (6)	155.
350	MT0350G	3.04		5.88 (149)	4.50 (114)	3.81 (97)	4.38 (111)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	15.6 (7)	162.
500	MT0500G	4.35		6.00 (152)	5.25 (133)	4.75 (121)	4.38 (111)	4.38 (111)	5 <sup>1</sup> / <sub>16</sub> (8) × 1 <sup>1</sup> / <sub>16</sub> (17)	21.0 (9)	181.
750	MT0750G	6.52		7.38 (187)	5.25 (133)	4.75 (121)	5.75 (146)	4.38 (111)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	30.0 (14)	252.
1000	MT1000G	8.70		7.50 (191)	6.38 (162)	5.38 (137)	4.50 (114)	5.19 (132)	7 <sup>1</sup> / <sub>16</sub> (14) × 1 <sup>1</sup> / <sub>16</sub> (17)	29.2 (13)	297.
1500	MT1500G	13.04		7.50 (191)	6.75 (171)	5.69 (144)	4.44 (113)	6.06 (154)	7 <sup>1</sup> / <sub>32</sub> (7) × 7 <sup>1</sup> / <sub>16</sub> (14)	33.5 (15)	385.
2000	MT2000G	17.39		8.25 (210)	6.25 (159)	5.69 (144)	5.25 (133)	6.06 (154)	7 <sup>1</sup> / <sub>32</sub> (7) × 7 <sup>1</sup> / <sub>16</sub> (14)	42.5 (19)	514.
3000	MT3000G	26.09		8.00 (203)	9.00 (229)	7.56 (192)	4.63 (117)	6.50 (165)	7 <sup>1</sup> / <sub>16</sub> (12) × 3 <sup>1</sup> / <sub>4</sub> (19)	63.7 (29)	642.
5000	MT5000G	43.48		10.50 (267)	9.00 (229)	10.19 (259)	6.50 (165)	6.50 (165)	7 <sup>1</sup> / <sub>16</sub> (12) × 3 <sup>1</sup> / <sub>4</sub> (19)	102.0 (46)	1027.



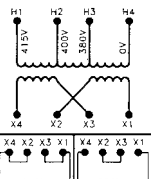
Includes secondary fuse clip on Sizes 50 through 750VA.Ⓞ

Primary Volts 230/460/575 50/60Hz Secondary Volts 95/115											
VA Rating	Catalog No	Output Amps		Dimensions Inches (mm)					Mounting Slots	Approx Ship Wt Lbs (Kg)	Price \$
				95V	115V	A	B	C			
50	MT0050H	0.53	0.44	3.00 (76)	3.00 (76)	2.56 (65)	2.19 (56)	2.50 (64)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	3.5 (2)	67.
75	MT0075H	0.79	0.65	3.13 (79)	3.38 (86)	2.88 (73)	2.38 (60)	2.81 (71)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	4.5 (2)	71.
100	MT0100H	1.05	0.87	3.88 (98)	3.38 (86)	2.88 (73)	2.88 (73)	2.81 (71)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	6.0 (3)	75.
150	MT0150H	1.58	1.30	4.25 (108)	3.75 (95)	3.19 (81)	3.25 (83)	3.13 (79)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	7.7 (4)	97.
200	MT0200H	2.11	1.74	4.25 (108)	4.50 (114)	3.81 (97)	2.75 (70)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	9.0 (4)	125.
250	MT0250H	2.63	2.17	4.75 (121)	4.50 (114)	3.81 (97)	3.19 (81)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	9.7 (4)	132.
300	MT0300H	3.16	2.61	5.13 (130)	4.50 (114)	3.81 (97)	3.63 (92)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	11.7 (5)	155.
350	MT0350H	3.68	3.04	5.00 (127)	4.50 (114)	3.81 (97)	3.75 (95)	4.38 (111)	5 <sup>1</sup> / <sub>16</sub> (8) × 1 <sup>1</sup> / <sub>16</sub> (17)	16.5 (8)	162.
500	MT0500H	5.26	4.35	5.88 (149)	5.25 (133)	4.75 (121)	4.63 (117)	4.38 (111)	5 <sup>1</sup> / <sub>16</sub> (8) × 1 <sup>1</sup> / <sub>16</sub> (17)	21.5 (10)	181.
750	MT0750H	7.89	6.52	7.00 (178)	5.25 (133)	4.75 (121)	5.75 (146)	4.38 (111)	5 <sup>1</sup> / <sub>16</sub> (8) × 1 <sup>1</sup> / <sub>16</sub> (17)	28.0 (13)	252.
1000	MT1000H	10.53	8.70	7.50 (191)	6.38 (162)	5.38 (137)	4.50 (114)	5.19 (132)	7 <sup>1</sup> / <sub>32</sub> (7) × 7 <sup>1</sup> / <sub>16</sub> (14)	29.2 (13)	297.
1500	MT1500H	15.79	13.04	8.25 (210)	6.75 (171)	5.69 (144)	5.25 (133)	6.06 (154)	7 <sup>1</sup> / <sub>32</sub> (7) × 7 <sup>1</sup> / <sub>16</sub> (14)	33.5 (15)	385.
2000	MT2000H	21.05	17.39	7.56 (192)	9.00 (229)	7.31 (186)	4.56 (116)	6.50 (165)	7 <sup>1</sup> / <sub>16</sub> (12) × 3 <sup>1</sup> / <sub>4</sub> (19)	42.5 (19)	514.
3000	MT3000H	31.58	26.09	8.63 (219)	9.00 (229)	7.56 (192)	5.25 (133)	6.50 (165)	7 <sup>1</sup> / <sub>16</sub> (12) × 3 <sup>1</sup> / <sub>4</sub> (19)	63.7 (29)	642.
5000	MT5000H	52.63	43.48	13.50 (343)	9.00 (229)	10.56 (268)	8.25 (210)	6.50 (165)	7 <sup>1</sup> / <sub>16</sub> (12) × 3 <sup>1</sup> / <sub>4</sub> (19)	102.0 (46)	1027.



Does not include secondary fuse clip on Sizes 50 through 5kVA.Ⓞ

Primary Volts 380/400/415 50/60Hz Secondary Volts 110 × 220											
VA Rating	Catalog No	Output Amps		Dimensions Inches (mm)					Mounting Slots	Approx Ship Wt Lbs (Kg)	Price \$
				110V	220V	A	B	C			
50	MT0050I	0.455	0.227	3.00 (76)	3.00 (76)	2.56 (65)	2.00 (51)	2.50 (64)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	3.0 (1)	48.
75	MT0075I	0.68	0.34	3.50 (89)	3.00 (76)	2.56 (65)	2.50 (64)	2.50 (64)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	4.0 (2)	58.
100	MT0100I	0.91	0.455	3.56 (90)	3.38 (86)	2.88 (73)	2.56 (65)	2.81 (71)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	5.2 (2)	64.
150	MT0150I	1.37	0.685	4.00 (102)	3.75 (95)	3.19 (81)	2.88 (73)	3.13 (79)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	7.0 (3)	82.
200	MT0200I	1.82	0.91	4.00 (102)	4.50 (114)	3.81 (97)	2.50 (64)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	8.7 (4)	103.
250	MT0250I	2.28	1.14	4.38 (111)	4.50 (114)	3.81 (97)	2.88 (73)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	10.2 (5)	122.
300	MT0300I	2.72	1.36	4.75 (121)	4.50 (114)	3.81 (97)	3.25 (83)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	11.0 (5)	128.
350	MT0350I	3.18	1.59	5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	1 <sup>3</sup> / <sub>64</sub> (5) × 3 <sup>1</sup> / <sub>8</sub> (10)	13.0 (6)	134.
500	MT0500I	4.55	2.27	5.38 (137)	5.25 (133)	4.75 (121)	4.13 (105)	4.38 (111)	5 <sup>1</sup> / <sub>16</sub> (8) × 1 <sup>1</sup> / <sub>16</sub> (17)	20.0 (9)	168.
750	MT0750I	6.82	3.41	7.00 (178)	5.25 (133)	4.75 (121)	5.75 (146)	4.38 (111)	5 <sup>1</sup> / <sub>16</sub> (8) × 1 <sup>1</sup> / <sub>16</sub> (17)	28.0 (13)	211.
1000	MT1000I	—	—	6.50 (165)	6.75 (172)	5.69 (144)	3.56 (91)	6.06 (154)	5 <sup>1</sup> / <sub>16</sub> (8) × 1 <sup>1</sup> / <sub>16</sub> (17)	28.0 (13)	297.



Does not include secondary fuse clips.Ⓞ



Note: Dimensions for reference, not for construction. Dimensions in inches (mm).

ⓄA 2-pole Primary Class CC Fuse Block Kit is available for field installation on Sizes 50–750VA. See Page 729 for details. Catalog Number KCCFPX2R—\$16.70 list price.

## Class MT

		Primary Volts 208/230/460, 200/220/440, 240/480 50/60Hz Secondary Volts 24 × 115, 23 × 110, 25 × 120									
VA Rating	Catalog No	Output Amps		Dimensions Inches (mm)					Mounting Slots	Approx Ship Wt Lbs (Kg)	Price \$
		24V	118V	A	B	C	D	E			
50	MT0050J	2.08	0.44	3.25 (83)	3.00 (76)	2.56 (65)	2.50 (64)	2.50 (64)	1/8 (5) × 3/8 (10)	3.4 (2)	67.
75	MT0075J	3.13	0.65	3.50 (89)	3.38 (86)	2.88 (73)	2.50 (64)	2.81 (71)	1/8 (5) × 3/8 (10)	4.8 (2)	71.
100	MT0100J	4.17	0.87	3.63 (92)	3.75 (95)	3.19 (81)	2.50 (64)	3.13 (79)	1/8 (5) × 3/8 (10)	5.9 (3)	75.
150	MT0150J	6.25	1.30	4.38 (111)	3.75 (95)	3.19 (81)	3.25 (83)	3.13 (79)	1/8 (5) × 3/8 (10)	7.9 (4)	97.
200	MT0200J	8.33	1.74	4.50 (114)	4.50 (114)	3.81 (97)	3.00 (76)	3.75 (95)	1/8 (5) × 3/8 (10)	10.6 (5)	125.
250	MT0250J	10.42	2.17	5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	1/8 (5) × 3/8 (10)	13.9 (6)	132.
300	MT0300J	12.50	2.61	5.13 (130)	5.25 (133)	4.75 (121)	3.88 (98)	4.38 (111)	5/16 (8) × 1/2 (17)	15.5 (7)	155.
350	MT0350J	14.58	3.04	5.38 (137)	5.25 (133)	4.75 (121)	4.13 (105)	4.38 (111)	5/16 (8) × 1/2 (17)	16.8 (8)	162.
500	MT0500J	20.84	4.35	6.50 (165)	5.25 (133)	4.75 (121)	5.25 (133)	4.38 (111)	5/8 (8) × 1/2 (17)	23.4 (11)	181.

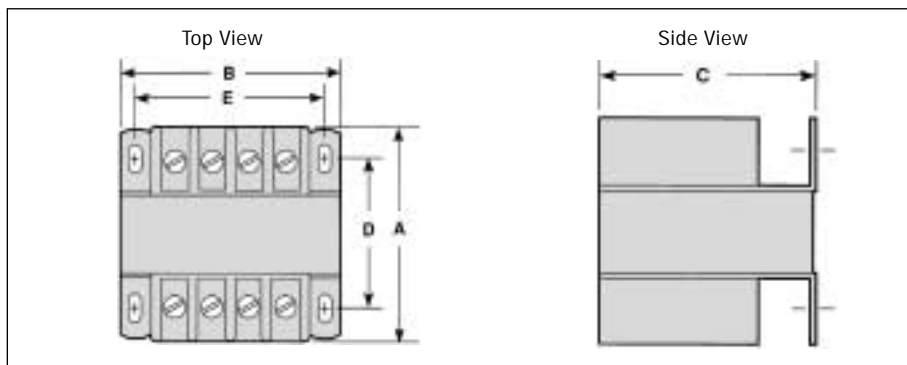
Includes secondary fuse clip on Sizes 50 through 500VA.Ⓢ

		Primary Volts 240 × 480 50/60Hz Secondary Volts 120 × 240									
VA Rating	Catalog No	Output Amps		Dimensions Inches (mm)					Mounting Slots	Approx Ship Wt Lbs (Kg)	Price \$
		120V	240V	A	B	C	D	E			
50	MT0050M	0.42	0.21	3.00 (76)	3.00 (76)	2.56 (65)	2.00 (51)	2.50 (64)	1/8 (5) × 3/8 (10)	2.6 (1)	69.
75	MT0075M	0.63	0.31	3.50 (89)	3.00 (76)	2.56 (65)	2.50 (64)	2.50 (64)	1/8 (5) × 3/8 (10)	3.5 (2)	73.
100	MT0100M	0.83	0.42	3.38 (86)	3.38 (86)	2.88 (73)	2.38 (60)	2.81 (71)	1/8 (5) × 3/8 (10)	4.2 (2)	77.
150	MT0150M	1.25	0.63	4.00 (102)	3.75 (95)	3.19 (81)	2.88 (73)	3.13 (79)	1/8 (5) × 3/8 (10)	6.7 (3)	101.
200	MT0200M	1.67	0.83	4.00 (102)	4.50 (114)	3.81 (97)	2.50 (64)	3.75 (95)	1/8 (5) × 3/8 (10)	8.5 (4)	130.
250	MT0250M	2.08	1.04	4.38 (111)	4.50 (114)	3.81 (97)	2.88 (73)	3.75 (95)	1/8 (5) × 3/8 (10)	10.0 (4)	137.
300	MT0300M	2.50	1.25	4.88 (124)	4.50 (114)	3.81 (97)	3.38 (86)	3.75 (95)	1/8 (5) × 3/8 (10)	11.8 (5)	161.
350	MT0350M	2.92	1.46	5.25 (133)	4.50 (114)	3.81 (97)	3.75 (95)	3.75 (95)	1/8 (5) × 3/8 (10)	13.6 (6)	168.
500	MT0500M	4.17	2.08	5.25 (133)	5.25 (133)	4.75 (121)	4.13 (105)	4.38 (111)	5/16 (8) × 1/2 (17)	17.5 (8)	189.
750	MT0750M	6.25	3.12	7.00 (178)	5.25 (133)	4.75 (121)	5.75 (146)	4.38 (111)	5/8 (8) × 1/2 (17)	26.4 (12)	262.

Does not include secondary fuse clips.Ⓢ

		Primary Volts 240/416/480/600, 230/400/460/575, 220/380/440/550, 208/500 50/60Hz Secondary Volts 99/120/130, 95/115/125, 91/110/120, 85/100/110									
VA Rating	Catalog No	Output Amps	Dimensions Inches (mm)					Mounting Slots	Approx Ship Wt Lbs (Kg)	Price \$	
			A	B	C	D	E				
50	MT0050L	0.38	4.00 (102)	3.38 (86)	2.88 (73)	2.44 (62)	2.81 (71)	1/8 (5) × 3/8 (10)	4.0 (2)	69.	
100	MT0100L	0.77	4.63 (117)	3.75 (95)	3.19 (81)	3.06 (78)	3.13 (79)	1/8 (5) × 3/8 (10)	6.6 (3)	77.	
150	MT0150L	1.15	4.44 (113)	4.50 (114)	3.81 (97)	2.88 (73)	3.75 (95)	1/8 (5) × 3/8 (10)	8.8 (4)	101.	
250	MT0250L	1.92	5.88 (149)	4.50 (114)	3.81 (97)	4.38 (111)	3.75 (95)	1/8 (5) × 3/8 (10)	14.7 (7)	137.	
350	MT0350L	2.69	5.63 (143)	5.25 (133)	4.44 (113)	4.75 (121)	4.38 (111)	5/16 (8) × 1/2 (17)	18.6 (8)	168.	
500	MT0500L	3.85	7.00 (178)	5.25 (133)	4.44 (113)	6.13 (156)	4.38 (111)	5/16 (8) × 1/2 (17)	25.6 (12)	189.	
750	MT0750L	5.77	7.00 (178)	6.75 (171)	5.75 (146)	4.13 (105)	6.06 (154)	5/8 (8) × 9/16 (17)	30.5 (14)	262.	

Includes secondary fuse clip on Sizes 50 through 750VA.Ⓢ



Note: Dimensions for reference, not for construction. Dimensions in inches (mm).

**Dimension "C" does not include the added height required for secondary fuse clips—0.50 in. (13 mm) maximum for type "K" clips.**

The Primary Fuse Kit, when installed, will add a maximum of 0.69 in. (18 mm) to the transformer "A" dimension and 1.94 in. (49 mm) to the "C" dimension.

Ⓢ A 2-pole Primary Class CC Fuse Block Kit is available for field installation. See page 729 for details. Catalog Number KCCFPX2R—\$16.70 list price.



## Class MT Suggested Overcurrent Protection

### Primary

Overcurrent protection on both the primary and secondary sides of transformers are specified in UL508 and the National Electrical Code. The maximum acceptable ratings are shown below. Due to the high inrush currents present when a transformer is initially energized, it is recommended that the primary fuse be time delay, to prevent nuisance trips during startup.

### Maximum Acceptable Rating of Primary Overcurrent Protection

If the rated primary current is less than 2 amps, the maximum rating of the overcurrent device is 300% for power circuits, shown above, or 500% for control circuits, shown below in parentheses).

If the rated primary current is 2 amps or more, the maximum rating of the overcurrent device is 250%. All figures assume secondary overcurrent protection per UL/NEC.

Primary Voltage	VA Rating										
	25	50	75	100	150	200	250	300	350	500	750
115	0.6 (1)	1.25 (2)	1.8 (3.2)	2.5 (4)	3.5 (6.25)	5 (8)	5	6.25	7.5	10	15
120	0.6 (1)	1.25 (2)	1.8 (3)	2.25 (4)	3.5 (6.25)	5 (8)	5	6.25	7	10	15
200	0.3 (0.6)	0.75 (1.25)	1.13 (1.8)	1.5 (2.5)	2.75 (3.5)	3 (5)	3.5 (6.25)	4.5 (7.5)	5 (8)	6.25	9
208	0.3 (0.6)	0.6 (1.1)	1 (1.8)	1.4 (2.25)	2 (3.5)	2.8 (4.5)	3.5 (6)	4 (7)	5 (8)	6	9
220	0.3 (0.5)	0.6 (1.1)	1 (1.6)	1.4 (2.25)	2 (3.2)	2.5 (4.5)	3.2 (5.6)	4 (6.25)	4.5 (7.5)	5.6	8
230	0.3 (0.5)	0.6 (1)	0.8 (1.6)	1.25 (2)	1.8 (3.2)	2.5 (4)	3.2 (5)	3.5 (6.25)	4.5 (7.5)	5	8
240	0.3 (0.5)	0.6 (1)	0.8 (1.5)	1.25 (2)	1.8 (3)	2.25 (4)	3 (5)	3.5 (6.5)	4 (7)	5	7.5
277	0.25 (0.4)	0.5 (0.8)	0.8 (1.25)	1 (1.8)	1.6 (2.5)	2 (3.5)	2.5 (4.5)	3.2 (5)	3.5 (6.25)	5 (9)	6.25
380	0.2 (0.3)	0.3 (0.6)	0.5 (0.8)	0.75 (1.25)	1.8 (1.8)	1.5 (2.5)	1.8 (3.2)	2.25 (3.5)	2.5 (4.5)	3.5 (6.25)	5.6 (9)
400	0.2 (0.3)	0.3 (0.6)	0.5 (0.8)	0.75 (1.25)	1.8 (1.8)	1.5 (2.5)	1.8 (3)	2.25 (3.5)	2.5 (4)	3.5 (6.25)	5.6 (9)
415	0.2 (0.3)	0.3 (0.6)	0.5 (0.8)	0.6 (1.1)	1 (1.8)	1.4 (2.25)	1.8 (3)	2 (3.5)	2.5 (4)	3.5 (6)	5 (9)
440	0.2 (0.25)	0.3 (0.5)	0.5 (0.8)	0.6 (1.1)	1 (1.6)	1.25 (2.25)	1.6 (2.8)	2 (3.2)	2.25 (3.5)	3.2 (5.6)	5 (8)
460	0.2 (0.25)	0.3 (0.5)	0.4 (0.8)	0.6 (1)	0.8 (1.6)	1.25 (2)	1.6 (2.5)	1.8 (3.5)	2.25 (3.5)	3.2 (5)	4.5 (8)
480	0.2 (0.25)	0.3 (0.5)	0.4 (0.75)	0.6 (1)	0.8 (1.5)	1.25 (2)	1.5 (2.5)	1.8 (3.2)	2 (3.5)	3 (5)	4.5 (7.5)
550	0.1 (0.2)	0.25 (0.4)	0.4 (0.6)	0.5 (0.8)	0.8 (1.25)	1 (1.8)	1.25 (2.25)	1.6 (2.25)	1.8 (3)	2.5 (4.5)	4 (6.25)
575	0.1 (0.2)	0.25 (0.4)	0.3 (0.6)	0.5 (0.8)	0.75 (1.25)	1 (1.6)	1.25 (2)	1.5 (2.5)	1.8 (3)	2.5 (4)	3.5 (6.25)
600	0.1 (0.2)	0.2 (0.4)	0.3 (0.6)	0.5 (0.8)	0.75 (1.25)	0.8 (1.6)	1.25 (2)	1.5 (2.5)	1.6 (2.8)	2.25 (4)	3.5 (6.25)

### Secondary

### Maximum Acceptable Rating of Secondary Overcurrent Protection

If the rated secondary is less than 9 amps, the maximum rating of the over-

current device is 167%. If the rated secondary current is 9 amps or more, the maximum rating of the overcurrent device is 125%. If 125% does not correspond to a standard fuse rating, the

next highest standard rating may be used.

Secondary Voltage	VA Rating										
	25	50	75	100	150	200	250	300	350	500	750
23	1.8	3.5	5	7	10	12	15	20	20	30	45
24	1.6	3.2	5	6.25	10	12	15	20	20	30	40
25	1.6	3.2	5	6.25	10	12	15	15	20	25	40
90	0.4	0.8	1.25	1.8	2.5	3.5	4.5	5	6.25	9	12
95	0.4	0.8	1.25	1.6	2.5	3.5	4	5	6	8	12
100	0.4	0.8	1.25	1.6	2.5	3.2	4	5	5.6	8	12
110	0.3	0.75	1.1	1.5	2.25	3	3.5	4.5	5	7.5	10
115	0.3	0.6	1	1.4	2	2.8	3.5	4	5	7	10
120	0.3	0.6	1	1.25	2	2.5	3.2	4	4.5	6.25	10
220	0.2	0.3	0.5	0.75	1.1	1.5	1.8	2.25	2.5	3.5	5.6
230	0.2	0.3	0.5	0.6	1	1.4	1.8	2	2.5	3.5	5
240	0.2	0.3	0.5	0.6	1	1.25	1.6	2	2.25	3.2	5