

# Industrial Control Transformers

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### PRODUCT DESCRIPTION

Control power transformers from Schneider Electric set the industry standard for design innovation and performance. They are designed with low impedance windings for excellent voltage regulation, and can accommodate the high inrush current associated with contactors, starters, solenoids, and relays.

A variety of designs are available to meet the diverse needs of panel builders and machinery OEMs. The versatility of our control transformer line offers unparalleled options for design engineers. We also have one of the most extensive offerings of custom products with no minimum order requirements.

We have a national network of distributors to ensure prompt delivery, including industry leading delivery on custom products. In most cases, we can design, manufacture, and ship a custom unit in two weeks or less.

### The Global Product Offering—Type T

Type T is our most popular and complete line of control transformers. It comes with unmatched design innovations for top performance and is manufactured using the most advanced insulating materials. The Type T control transformer is the best choice if size and cost are of concern.

### The Exceptional Regulation Offering —Type EO

Constructed with traditional materials and manufacturing processes, Type EO transformers are UL and CSA Component Recognized. Units are designed for 55°C rise. All units are 60HZ rated, with de-rated VA levels for 50HZ.

### Transformers with Fuse Block Protection—Types TF and EOF

We offer both product lines with factory installed overcurrent protection fuse blocks.

Type TF and EOF transformers consist of two primary fuse blocks and one secondary fuse block, a configuration that meets the majority of overcurrent needs by panel builders and machinery OEMs. Since the fuse blocks are pre-wired and mounted on top of the transformer, the Type TF and EOF transformers have the same footprint as the Type T and Type EO units, respectively. This design frees up space normally used for separate fuse blocks.

We also have an extensive fuse block offering for custom applications. See the overcurrent section of this catalog for full details.

### Leaded Control Transformer Line

Schneider Electric offers transformers with internally pre-wired 24-inch primary and secondary leads, instead of terminal boards, to make installation easier and faster for many applications. These are only available for single voltage primary and single voltage secondary applications.

### MultiTap

Schneider Electric offers Type T and Type EO transformers in the MultiTap version. The MultiTap control transformer was designed to respond to the increased need for voltage and stock flexibility. It combines multiple primary voltages with one or more secondary voltages, all in a single transformer.

The most flexible MultiTap voltage is the Universal, available on the Type T product line only. It allows for standard primary voltages of 208 to 600V and 110, 115, or 120V secondary voltages.

# Industrial Control Transformers

## Type T Transformers

### Type T VA Ratings

UL, cUL, CSA and NOM VA Rating	CE VA Rating
25	25
50	50
75	75
100	100
150	150
200	200
250	160
300	200
350	250
500	300
750	500
1000	630
1500	1000
2000	1500
3000	2000
5000	3000

### Type T Listings

Listing	File	VA Range
UL	E61239, Guide XPTQ2	25–5000
cUL	E61239	1500–5000
CSA	LR37055, Guide 184-N-90	25–1000
EN	947923, EN 61 558/01.89 (TUV ref: 00941-RAG/sg E9371495E01)	25–200
	9579078, EN 61 558/01.89 (TUV ref: 00941-RAG/sg E9471921E01)	250–1000
	9579078, EN 61 558/01.89 (TUV ref: 00941-RAG/sg E9471921.02E01)	1500–3000

### TYPE T TRANSFORMERS

The Type T units are designed for the global market and are the best choice when size and cost are of concern. This is our most popular and complete offering of industrial control transformers. The following features are included:

- 50/60 Hz rated
- Customer installed accessories (Finger-Safe covers, fuse blocks, fuse clips)
- Type T transformers are designed with various temperature classes:
  - 25–150 VA with a 55° C temperature rise, 105° C insulation
  - 200–350 VA with a 80° C temperature rise, 130° C insulation
  - 500–5000 VA with a 115° C temperature rise, 180° C insulation

Schneider Electric manufactures a wide variety of voltage combinations for control transformers. The voltage combinations are expressed as “Voltage Codes”, and are embedded within the catalog number of the transformer. Standard codes are listed. If the voltage combination you need is not listed, please call your Schneider Electric distributor for assistance.

### CE Marking

Industrial control transformers (ICTs) entering the European Union (EU) after January 1, 1997 are required by EU standards to have CE marking or Declaration of Conformity to CE. EU documentation requires compliance with specification EN 61 558 of the Low Voltage Directive. Type T ICTs from Schneider Electric comply with this specification and are third party tested to TÜV standards, which adhere to, and are accepted by, EU standards. A Declaration of Conformity for all Type T units is available upon request.

Because of different overload criteria in the CE specification, Schneider Electric dual rates these transformers for UL VA, cUL VA, CSA VA, NOM VA and CE VA ratings (see “Type T VA Ratings” table). Because they are widely used with control circuit panels, ICTs are also required to comply with EN 60 204 and EN 61 558 in these applications. The Type T transformer line complies with EN 60 204 when Fingersafe® covers are installed.

For more information regarding CE marking, please contact your local Schneider Electric field sales office.



# Industrial Control Transformers Type T Transformers

## Selection Guide

**Example:**

This example assumes the following:

- Two NEMA size 0 contactors do not start together, but one could be ON when the other starts.
  - One NEMA size 2 contactor can start with either of the other contactors.
  - One pilot light at 2 VA
1. VA and inrush are:  
NEMA 0: sealed 27 VA; inrush 245 VA  
NEMA 2: sealed 37 VA; inrush 311 VA; pilot light 2 VA
  2. Total VA: 27 + 27 + 37 + 2 = 93 VA
  3. Total inrush VA: 245 + 311 + 27 + 2 = 582 VA
  4. From Regulation Chart for Type T at right below:  
100 VA minimum unit; inrush 499 VA will not work at 90%  
150 VA (next standard size); inrush 666 VA will work at 95%

1. Determine inrush and sealed VA of each coil in the control circuit and VA of all other components.
2. Total all sealed VA of all operating coils and other loads VA (determines minimal VA size required for the circuit).
3. Total the inrush VA of all coils that are starting at the same time and all loads and coils that are running (using the regulation chart to give possible units to be used).
4. Take VA size from step 2, go to standard VA size in chart below. Make sure inrush VA from chart is greater than total VA from step 3. If not, go to next larger VA size and repeat.

If your supply voltage is stable and fluctuates less than 5%, we recommend you use the 90% secondary voltage column. If your supply voltage is not stable and fluctuates more than 10%, we recommend you use the 95% secondary voltage column. We recommend that you never use the 85% secondary voltage column since magnetic devices lose life expectancy if they are continuously started at 85% of rated voltage.

## Regulation Chart for Type T

VA	Secondary Voltage					
	Inrush UL VA at 20% Power Factor			Inrush UL VA at 40% Power Factor		
	95%	90%	85%	95%	90%	85%
50	193	266	339	151	215	282
75	271	396	520	210	318	430
100	339	499	659	266	404	549
150	666	893	1120	529	731	942
200	588	815	1041	459	659	866
250	1416	1910	2388	1057	1494	1936
300	1634	2184	2709	1194	1681	2169
350	1894	2592	3261	1392	2005	2621
500	3197	4104	4981	2374	3195	4019
750	3770	5515	7231	2887	4391	5945
1000	6587	9079	11430	4706	6886	9051
1500	19324	23983	28607	15066	19361	23756
2000	31384	38777	46161	24794	31630	38667
3000	26539	39934	52713	19355	30721	42216
5000	53111	85265	116277	39368	66309	93882

# Industrial Control Transformers

## Type T Transformers

Use the following table to quickly find a Type T transformer for a 120 volt load for your specific application. First, find your source and load voltages. Then, go to the indicated pages for details on the transformer(s) matching those voltages.

### Type T Transformers for 120 Volt Loads

Source Voltage	Load Voltage	Voltage Code(s)	Go To Page(s)	Source Voltage	Load Voltage	Voltage Code(s)	Go To Page(s)	Source Voltage	Load Voltage	Voltage Code(s)	Go To Page(s)
110	110	D24, D55	9, 13	277	115	D18	11	440	110/220	D31	13
110	220	D55	13	277	120	D4, D60	9, 14	460	95	D32, D50	11, 12
110	110/220	D55	13	277	240	D60	14	460	115	D1, D20, D32, D95, D50, D31	8, 10, 11, 12, 13
115	115	D24, D55	9, 13	277	120/240	D60	14	460	125	D50	12
115	230	D55	13	364	85	D50	12	460	230	D31	13
115	115/230	D55	13	364	100	D50	12	460	115/230	D31	13
120	120	D24, D55	9, 13	364	110	D50	12	480	99	D50	12
120	240	D55	13	380	91	D50	12	480	100	D32	11
120	120/240	D55	13	380	95	D18	11	480	120	D1, D32, D40, D95, D50, D31	8, 11, 12, 13
190	110	D95	11	380	110	D6, D50	9, 12	480	130	D50	12
200	115	D93, D95	9, 11	380	115	D18, D33	11, 14	480	240	D31	13
208	85	D50	12	380	120	D40, D50	11, 12	480	120/240	D31	13
208	95	D18	11	380	230	D33	14	500	85	D50	12
208	100	D50	12	380	115/230	D33	14	500	100	D50	12
208	110	D50	12	400	95	D50	12	500	110	D50	12
208	115	D20, D18	10, 11	400	115	D33	14	550	90	D32	11
208	120	D3, D40	9, 11	400	120	D103, D50	9, 12	550	91	D50	12
220	90	D32	11	400	125	D50	12	550	110	D5, D32, D50, D37	9, 11, 12, 14
220	91	D50	12	400	230	D33	14	550	120	D50	12
220	110	D1, D32, D95, D50, D31, D55	8, 11, 12, 13	400	115/230	D33	14	550	220	D37	14
220	120	D50	12	415	110	D17	9	550	110/220	D37	14
220	220	D31, D55	13	415	115	D33	14	575	95	D32, D50	11, 12
220	110/220	D31, D55	13	415	230	D33	14	550	110/220	D37	14
230	95	D32, D50	11, 12	415	115/230	D33	14	575	95	D32, D50	11, 12
230	115	D1, D20, D32, D95, D50, D31, D55	8, 10, 11, 12, 13	416	99	D50	12	575	115	D5, D32, D50, D37	9, 11, 12, 14
230	125	D50	12	416	120	D40, D50	11, 12	575	125	D50	12
230	230	D31, D55	13	416	130	D50	12	575	230	D37	14
230	115/230	D31, D55	13	420	85	D50	12	575	115/230	D37	14
240	99	D50	12	420	100	D50	12	600	99	D50	12
240	100	D32	11	420	110	D50	12	600	100	D32	11
240	120	D1, D32, D40, D95, D50, D31, D55	8, 11, 12, 13	440	90	D32	11	600	120	D5, D32, D50, D37	9, 11, 12, 14
240	130	D50	12	440	91	D50	12	600	130	D50	12
240	240	D31, D55	13	440	110	D1, D32, D95, D50, D31	8, 11, 12, 13	600	240	D37	14
240	120/240	D31, D55	13	440	120	D50	12	600	120/240	D37	14
277	95	D18	11	440	220	D31	13				

# Industrial Control Transformers

## Type T Transformers

Use the following table to quickly find a Type T transformer for a 24 volt load for your specific application. First, find your source and load voltages. Then, go to the indicated pages for details on the transformer(s) matching those voltages.

**Type T Transformers for 24 Volt Loads**

Source Voltage	Load Voltage	Voltage Code(s)	Go To Page(s)
115	24	D89	15
120	24	D23, D7	15, 16
208	24	D14, D19	16, 17
230	24	D89, D112	15, 16
240	24	D2, D23, D19	15, 17
277	24	D25, D19	16, 17
380	24	D88, D19	16, 17
460	24	D92	15
480	24	D2, D19	15, 17
600	24	D16	16

**Custom-Built Type T Transformers**

For voltage combinations not listed, Schneider Electric offers custom-built Type T transformers. Type T units are limited to the following:

- Primary Voltage Range: 120 to 600 Volts
- Secondary Voltage Range: 12 to 277 Volts (25 to 1000VA)
  - 12/24 to 277 Volts (25 to 2000VA)
  - 24/48 to 277 Volts (25 to 5000VA)

	Single	Dual	One Primary Tap (two voltages)	Two Primary Taps (three voltages)	Three Primary Taps (four voltages)	Four Primary Taps (five Voltages)
<b>Single</b>	25VA to 5000VA	25VA to 5000VA	Voltages with 20% 25VA to 5000VA Voltages greater than 20% 25VA to 3000VA	Voltages with 20% 25VA to 5000VA Voltages greater than 20% 25VA to 3000VA	25VA to 3000VA	25VA to 3000VA
<b>Dual</b>	25VA to 5000VA	25VA to 5000VA	Voltages with 20% 25VA to 5000VA Voltages greater than 20% 25VA to 3000VA	Voltages with 20% 25VA to 5000VA Voltages greater than 20% 25VA to 3000VA	25VA to 3000VA	25VA to 3000VA

Schneider Electric also offers Secondary Tapped units and Multiple Winding Secondary units. Since the sizing of these units are determined by the secondary loading, they are limited to 3000VA total secondary capacity in the 9070 Type T product.

To request a price quotation from Schneider Electric for a custom-built Type T transformer, use the price quote sheet on page 26.

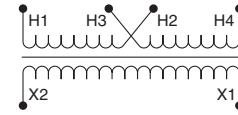
# Industrial Control Transformers

## Type T Transformers

### 120 Volt Control Secondary

#### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D1	220 x 440 230 x 460 240 x 480	110 115 120	220/230/240 V: Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4 440/460/480 V: Connect to H1 and H4 Jumper H2 with H3	Connect to X1 and X2



#### Dimensions

VA		Catalog Number	Figure	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	25	9070T25D1	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
50	50	9070T50D1	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
75	75	9070T75D1	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
100	100	9070T100D1	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
150	150	9070T150D1	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	200	9070T200D1	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
250	160	9070T250D1	2	I	5.30	135	3.75	95	3.21	82	2.88	73	3.13	80	0.20 x 0.38	5 x 10
300	200	9070T300D1	2	I	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	0.20 x 0.38	5 x 10
350	250	9070T350D1	2	I	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	0.20 x 0.38	5 x 10
500	300	9070T500D1	2	I	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	0.20 x 0.38	5 x 10
750	500	9070T750D1	2	I	5.61	143	5.25	133	4.51	115	3.43	87	4.38	111	0.28 x 0.56	7 x 14
1000	630	9070T1000D1	2	I	6.30	160	5.25	133	4.51	115	4.31	109	4.38	111	0.28 x 0.56	7 x 14
1500	1000	9070T1500D1	2	I	5.92	150	7.06	179	6.17	157	4.13	105	5.81	148	0.28 x 0.56	7 x 14
2000	1500	9070T2000D1	2	I	7.17	182	7.06	179	6.17	157	4.56	116	5.81	148	0.28 x 0.56	7 x 14
3000	2000	9070T3000D1	3	I	7.24	184	9.00	229	8.75	222	4.63	118	7.63	194	0.44 x 1.13	11 x 29
5000	3000	9070T5000D1	3	I	9.15	232	9.00	229	8.75	222	6.56	167	7.63	194	0.44 x 1.13	11 x 29

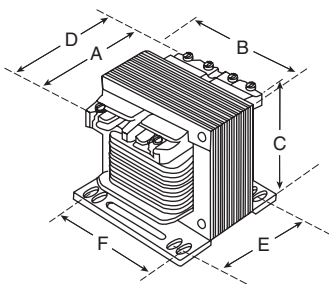


Figure 1

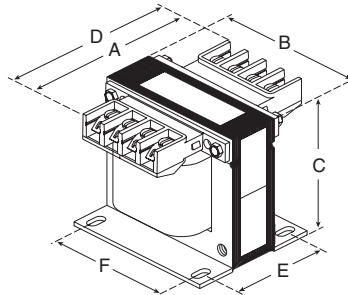


Figure 2

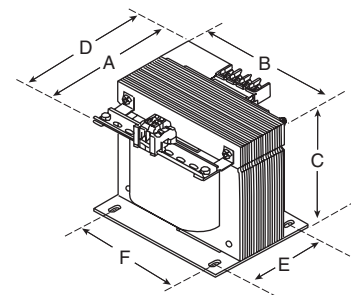


Figure 3

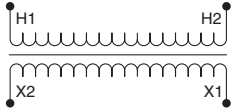


# Industrial Control Transformers Type T Transformers

## 120 Volt Control Secondary

### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D3	208	120	Connect to H1 and H2	Connect to X1 and X2
D4	277	120		
D5	550	110		
	575	115		
	600	120		
D6	380	110		
D17	415	110		
D24	110	110		
	115	115		
	120	120		
D93	200	115		
D103	400	120		



### Dimensions

VA		Catalog Number <sup>1</sup>	Figure	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	25	9070T25●	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
50	50	9070T50●	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
75	75	9070T75●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
100	100	9070T100●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
150	150	9070T150●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	200	9070T200●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
250	160	9070T250●	2	I	5.30	135	3.75	95	3.21	82	2.88	73	3.13	80	0.20 x 0.38	5 x 10
300	200	9070T300●	2	I	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	0.20 x 0.38	5 x 10
350	250	9070T350●	2	I	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	0.20 x 0.38	5 x 10
500	300	9070T500●	2	I	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	0.20 x 0.38	5 x 10
750	500	9070T750●	2	I	5.61	143	5.25	133	4.51	115	3.43	87	4.38	111	0.28 x 0.56	7 x 14
1000	630	9070T1000●	2	I	6.30	160	5.25	133	4.51	115	4.31	109	4.38	111	0.28 x 0.56	7 x 14
1500	1000	9070T1500●	2	I	5.92	150	7.06	179	6.17	157	4.13	105	5.81	148	0.28 x 0.56	7 x 14
2000	1500	9070T2000●	2	I	7.17	182	7.06	179	6.17	157	4.56	116	5.81	148	0.28 x 0.56	7 x 14
3000	2000	9070T3000● <sup>2</sup>	2	I	6.38	162	9.00	229	7.63	194	4.63	118	7.63	194	0.44 x 1.13	11 x 29
		9070T3000● <sup>3</sup>	3	I	7.24	184	9.00	229	8.75	222	4.63	118	7.63	194	0.44 x 1.13	11 x 29
		9070T3000D24	3	N/A	8.08	205	9.00	229	8.75	222	4.63	118	7.63	194	0.44 x 1.13	11 x 29
5000	3000	9070T5000●	3	I	9.15	232	9.00	229	8.75	222	6.56	167	7.63	194	0.44 x 1.13	11 x 29
		9070T5000D24	3	N/A	9.99	254	9.00	229	8.75	222	6.56	167	7.63	194	0.44 x 1.13	11 x 29

<sup>1</sup> Complete the catalog number by replacing the ● with the correct Voltage Code from the "Voltage and Connection Options" table above.  
<sup>2</sup> Complete the catalog number by replacing the ● with Voltage Code D3 or D4 from the "Voltage and Connection Options" table above.  
<sup>3</sup> Complete the catalog number by replacing the ● with Voltage Code D5, D6, D17, D93, or D103 from the "Voltage and Connection Options" table above.

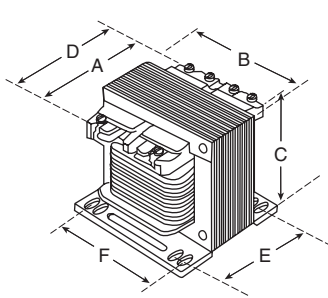


Figure 1

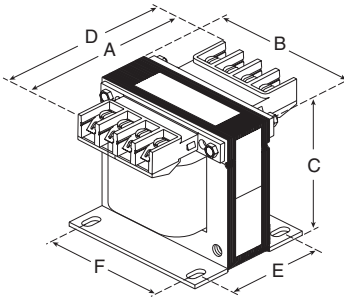


Figure 2

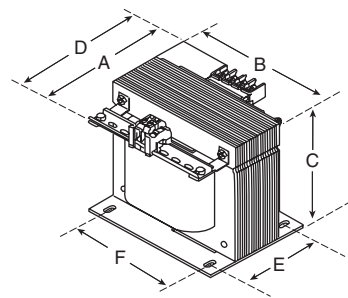


Figure 3

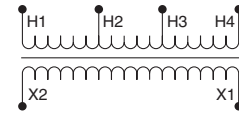
# Industrial Control Transformers

## Type T MultiTap Transformers

### 120 Volt Control Secondary

#### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D20	208/230/460	115	208: Connect to H1 and H2 230: Connect to H1 and H3 460: Connect to H1 and H4	Connect to X1 and X2



#### Dimensions

VA		Catalog Number <sup>1</sup>	Figure	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	25	9070T25D20	1	II	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
50	50	9070T50D20	1	II	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
75	75	9070T75D20	1	II	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
100	100	9070T100D20	1	II	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
150	150	9070T150D20	1	II	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	200	9070T200D20	2	II	4.70	119	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
250	160	9070T250D20	2	II	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	0.20 x 0.38	5 x 10
300	200	9070T300D20	2	II	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	0.20 x 0.38	5 x 10
350	250	9070T350D20	2	II	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	0.20 x 0.38	5 x 10
500	300	9070T500D20	2	II	5.61	143	5.25	133	4.51	115	3.43	87	4.38	111	0.28 x 0.56	7 x 14
750	500	9070T750D20	2	II	6.30	160	5.25	133	4.51	115	4.31	109	4.38	111	0.28 x 0.56	7 x 14
1000	630	9070T1000D20	2	II	5.92	150	7.06	179	6.17	157	4.13	105	5.81	148	0.28 x 0.56	7 x 14
1500	1000	9070T1500D20	2	II	7.17	182	7.06	179	6.17	157	4.56	116	5.81	148	0.28 x 0.56	7 x 14
2000	1500	9070T2000D20	2	II	6.38	162	9.00	229	7.63	194	4.63	118	7.63	194	0.44 x 1.13	11 x 29
3000	2000	9070T3000D20	2	II	8.31	211	9.00	229	7.63	194	6.56	167	7.63	194	0.44 x 1.13	11 x 29

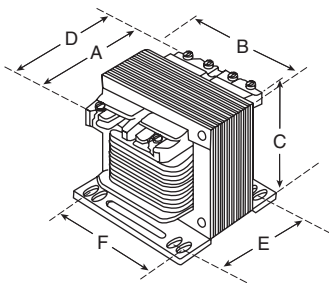


Figure 1

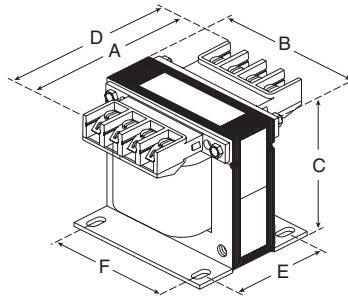


Figure 2

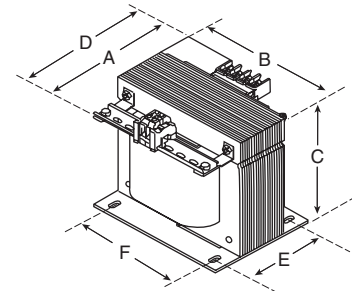


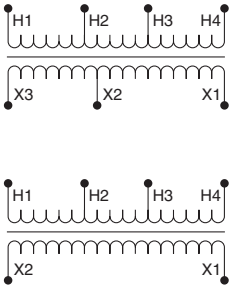
Figure 3

# Industrial Control Transformers Type T MultiTap Transformers

## 120 Volt Secondary

### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D18	208/277/380	95/115	208: Connect to H1 and H2 277: Connect to H1 and H3 380: Connect to H1 and H4	95: Connect to X1 and X2 115: Connect to X1 and X3
D32	220/440/550 230/460/575 240/480/600	90/110 95/115 100/120	220 or 230 or 240: Connect to H1 and H2 440 or 460 or 480: Connect to H1 and H3 550 or 575 or 660: Connect to H1 and H4	90 or 95 or 100: Connect to X1 and X2 110 or 115 or 120: Connect to X1 and X3
D95	190/220/440 200/230/460 208/240/480	110 115 120	190 or 200 or 208: Connect to H1 and H2 220 or 230 or 240: Connect to H1 and H3 440 or 460 or 480: Connect to H1 and H4	110 or 115 or 120: Connect to X1 and X2



### Dimensions

VA		Catalog Number <sup>1</sup>	Figure	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	25	9070T25●	1	II	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
50	50	9070T50●	1	II	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
75	75	9070T75D32	1	II	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
75	75	9070T75● <sup>2</sup>	1	II	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
100	100	9070T100●	1	II	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
150	150	9070T150D32	2	II	4.70	119	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
150	150	9070T150● <sup>2</sup>	1	II	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	200	9070T200●	2	II	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	0.20 x 0.38	5 x 10
250	160	9070T250D32	2	II	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	0.20 x 0.38	5 x 10
250	160	9070T250● <sup>2</sup>	2	II	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	0.20 x 0.38	5 x 10
300	200	9070T300D32	2	II	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	0.20 x 0.38	5 x 10
300	200	9070T300● <sup>2</sup>	2	II	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	0.20 x 0.38	5 x 10
350	250	9070T350●	2	II	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	0.20 x 0.38	5 x 10
500	300	9070T500●	2	II	5.61	143	5.25	133	4.51	115	3.43	87	4.38	111	0.28 x 0.56	7 x 14
750	500	9070T750●	2	II	6.30	160	5.25	133	4.51	115	4.31	109	4.38	111	0.28 x 0.56	7 x 14
1000	630	9070T1000●	2	II	5.92	150	7.06	179	6.17	157	4.13	105	5.81	148	0.28 x 0.56	7 x 14
1500	1000	9070T1500●	2	II	7.17	182	7.06	179	6.17	157	4.56	116	5.81	148	0.28 x 0.56	7 x 14
2000	1500	9070T2000●	2	II	6.38	162	9.00	229	7.63	194	4.63	118	7.63	194	0.44 x 1.13	11 x 29
3000	2000	9070T3000●	3	II	9.15	232	9.00	229	8.75	222	6.56	167	7.63	194	0.44 x 1.13	11 x 29

<sup>1</sup> Complete the catalog number by replacing the ● with the correct Voltage Code from the "Voltage and Connection Options" table above.

<sup>2</sup> Complete the catalog number by replacing the ● with Voltage Code D18 or D95 from the "Voltage and Connection Options" table above.

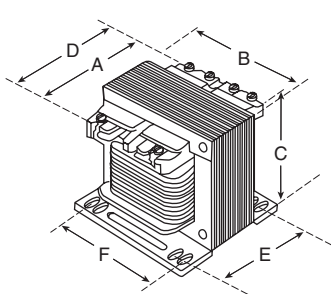


Figure 1

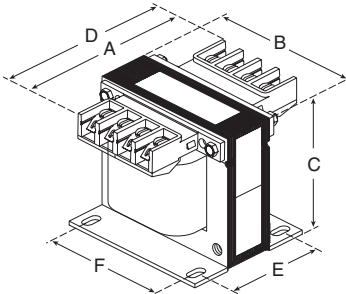


Figure 2

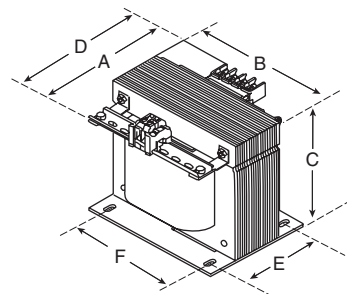


Figure 3

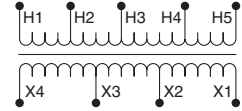
# Industrial Control Transformers

## Type T MultiTap Transformers

Universal

### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D50	208/364/420/500 220/380/440/550 230/400/460/575 240/416/480/600	85/100/110 91/110/120 95/115/125 99/120/130	208 or 220 or 230 or 240: Connect to H1 and H2	85 or 91 or 95 or 99: Connect to X1 and X2
			364 or 380 or 400 or 416: Connect to H1 and H3	100 or 110 or 115 or 120: Connect to X1 and X3
			420 or 440 or 460 or 480: Connect to H1 and H4	110 or 120 or 125 or 130: Connect to X1 and X4
			500 or 550 or 575 or 600: Connect to H1 and H5	



### Dimensions

VA		Catalog Number	Figure	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	25	9070T25D50	4	III	4.43	113.0	3.38	85.9	2.89	73.4	2.38	61.0	2.81	71.4	0.20 x 0.48	5 x 12
50	50	9070T50D50	4	III	4.43	113.0	3.38	85.9	2.89	73.4	2.38	61.0	2.81	71.4	0.20 x 0.48	5 x 12
75	75	9070T75D50	4	III	4.70	119.4	3.75	95.3	3.20	81.3	2.88	73.2	3.13	80.0	0.20 x 0.38	5 x 10
100	100	9070T100D50	4	III	4.70	119.4	3.75	95.3	3.20	81.3	2.88	73.2	3.13	80.0	0.20 x 0.38	5 x 10
150	150	9070T150D50	4	III	4.74	120.4	4.50	114.3	3.84	98.0	2.56	65.0	3.75	95.3	0.20 x 0.38	5 x 10
200	200	9070T200D50	4	III	5.11	129.8	4.50	114.3	3.84	98.0	3.00	76.2	3.75	95.3	0.20 x 0.38	5 x 10
250	160	9070T250D50	4	III	5.11	129.8	4.50	114.3	3.84	98.0	3.00	76.2	3.75	95.3	0.20 x 0.38	5 x 10
300	200	9070T300D50	4	III	5.49	139.4	4.50	114.3	3.84	98.0	3.56	90.4	3.75	95.3	0.20 x 0.38	5 x 10
350	250	9070T350D50	4	III	5.61	142.5	5.25	133.4	4.51	114.6	3.43	87.1	4.38	111.3	0.28 x 0.56	7 x 14
500	300	9070T500D50	4	III	5.61	142.5	5.25	133.4	4.51	114.6	3.43	87.1	4.38	111.3	0.28 x 0.56	7 x 14
750	500	9070T750D50	4	III	6.30	160.0	5.25	133.4	4.51	114.6	4.31	110.0	4.38	111.3	0.28 x 0.56	7 x 14
1000	630	9070T1000D50	4	III	5.92	150.4	7.06	179.3	6.17	156.7	4.13	104.9	5.81	147.6	0.28 x 0.56	7 x 14
1500	1000	9070T1500D50	4	III	7.17	182.1	7.06	179.3	6.17	156.7	4.56	115.8	5.81	147.6	0.28 x 0.56	7 x 14
2000	1500	9070T2000D50	4	III	6.38	162.1	9.00	228.6	7.63	193.8	4.63	117.6	7.63	193.8	0.44 x 1.13	11 x 29

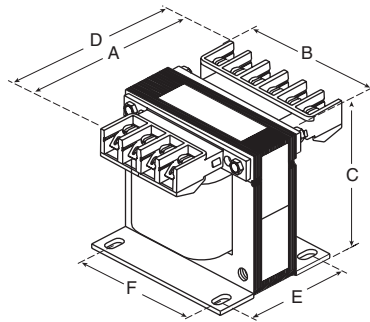


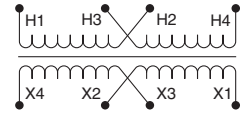
Figure 4

# Industrial Control Transformers Type T Transformers with Dual Secondary

## 120/240 Volt Secondary

### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D31	220 x 440 230 x 460 240 x 480	110/220 115/230 120/240	220 or 230 or 240: Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4	110 or 115 or 120: Connect to X1 and X4 Jumper X1 with X3 Jumper X2 with X4
			440 or 460 or 480: Connect to H1 and H4 Jumper H2 with H3	220 or 230 or 240: Connect to X1 and X4 Jumper X2 with X3
D55	110 x 220 115 x 230 120 x 240	110 x 220 115 x 230 120 x 240	110 or 115 or 120: Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4	110 or 115 or 120: Connect to X1 and X4 Jumper X1 with X3 Jumper X2 with X4
			220 or 230 or 240: Connect to H1 and H4 Jumper H2 with H3	220 or 230 or 240: Connect to X1 and X4 Jumper X2 with X3



### Dimensions

VA		Catalog Number <sup>1</sup>	Figure	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	25	9070T25●	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
50	50	9070T50●	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
75	75	9070T75●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
100	100	9070T100●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
150	150	9070T150●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	200	9070T200●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
250	160	9070T250●	2	I	5.30	135	3.75	95	3.21	82	2.88	73	3.13	80	0.20 x 0.38	5 x 10
300	200	9070T300●	2	I	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	0.20 x 0.38	5 x 10
350	250	9070T350●	2	I	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	0.20 x 0.38	5 x 10
500	300	9070T500●	2	I	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	0.20 x 0.38	5 x 10
750	500	9070T750●	2	I	5.61	143	5.25	133	4.51	115	3.43	87	4.38	111	0.28 x 0.56	7 x 14
1000	630	9070T1000●	2	I	6.30	160	5.25	133	4.51	115	4.31	109	4.38	111	0.28 x 0.56	7 x 14
1500	1000	9070T1500●	2	I	5.92	150	7.06	179	6.17	157	4.13	105	5.81	148	0.28 x 0.56	7 x 14
2000	1500	9070T2000●	2	I	7.17	182	7.06	179	6.17	157	4.56	116	5.81	148	0.28 x 0.56	7 x 14
3000	2000	9070T3000●	2	I	6.38	162	9.00	229	7.63	194	4.63	118	7.63	194	0.44 x 1.13	11 x 29
5000	3000	9070T5000●	2	I	8.31	211	9.00	229	7.63	194	6.56	167	7.63	194	0.44 x 1.13	11 x 29

<sup>1</sup> Complete the catalog number by replacing the ● with the correct Voltage Code from the "Voltage and Connection Options" table above.

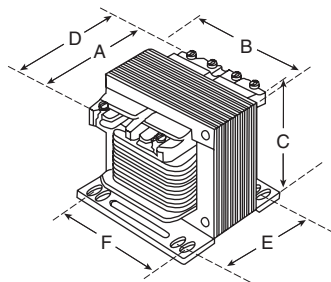


Figure 1

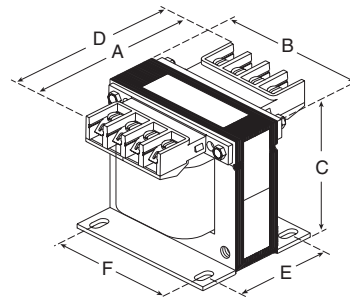


Figure 2

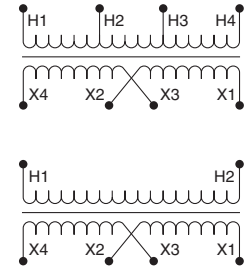
# Industrial Control Transformers

## Type T Transformers with Dual Secondary

120/240 Volt Secondary

### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D33	380/400/415	115/230	380: Connect to H1 and H2 400: Connect to H1 and H3 415: Connect to H1 and H4	115: Connect to X1 and X4 Jumper X1 with X3 Jumper X2 with X4 230: Connect to X1 and X4 Jumper X2 with X3
D37	550/575/600	110/220 115/230 120/240	550 or 575 or 600: Connect to H1 and H2	110 or 115 or 120: Connect to X1 and X4 Jumper X1 with X3 Jumper X2 with X4 220 or 230 or 240: Connect to X1 and X4 Jumper X2 with X3
D60	277	120/240	277: Connect to H1 and H2	120: Connect to X1 and X4 Jumper X1 with X3 Jumper X2 with X4 240: Connect to X1 and X4 Jumper X2 with X3



### Dimensions

VA		Catalog Number <sup>1</sup>	Figure	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	25	9070T25●	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
50	50	9070T50●	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
75	75	9070T75●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
100	100	9070T100●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
150	150	9070T150●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	200	9070T200●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
250	160	9070T250●	2	I	5.30	135	3.75	95	3.21	82	2.88	73	3.13	80	0.20 x 0.38	5 x 10
300	200	9070T300●	2	I	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	0.20 x 0.38	5 x 10
350	250	9070T350●	2	I	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	0.20 x 0.38	5 x 10
500	300	9070T500●	2	I	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	0.20 x 0.38	5 x 10
750	500	9070T750●	2	I	5.61	143	5.25	133	4.51	115	3.43	87	4.38	111	0.28 x 0.56	7 x 14
1000	630	9070T1000●	2	I	6.30	160	5.25	133	4.51	115	4.31	109	4.38	111	0.28 x 0.56	7 x 14
1500	1000	9070T1500●	2	I	5.92	150	7.06	179	6.17	157	4.13	105	5.81	148	0.28 x 0.56	7 x 14
2000	1500	9070T2000●	2	I	7.17	182	7.06	179	6.17	157	4.56	116	5.81	148	0.28 x 0.56	7 x 14
3000	2000	9070T3000●	2	I	6.38	162	9.00	229	7.63	194	4.63	118	7.63	194	0.44 x 1.13	11 x 29
5000	3000	9070T5000●	2	I	8.31	211	9.00	229	7.63	194	6.56	167	7.63	194	0.44 x 1.13	11 x 29

<sup>1</sup> Complete the catalog number by replacing the ● with the correct Voltage Code from the "Voltage and Connection Options" table above.

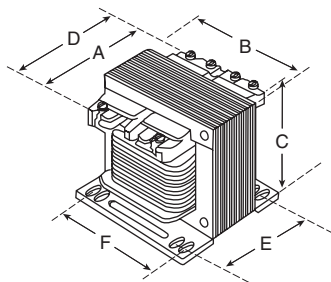


Figure 1

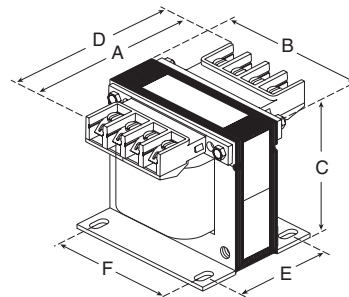


Figure 2

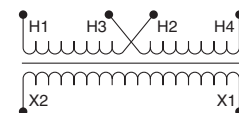
# Industrial Control Transformers

## Type T Transformers with 24 Volt Secondary

### 24 Volt Secondary

#### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D2	240 x 480	24	240: Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4 480: Connect to H1 and H4 Jumper H2 with H3	Connect to X1 and X2
D23	120 x 240	24	120: Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4 240: Connect to H1 and H4 Jumper H2 with H3	
D89	115 x 230	24	115: Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4 230: Connect to H1 and H4 Jumper H2 with H3	
D92	230 x 460	24	230: Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4 460: Connect to H1 and H4 Jumper H2 with H3	



#### Dimensions

VA		Catalog Number <sup>1</sup>	Figure	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	25	9070T25●	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
50	50	9070T50●	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
75	75	9070T75●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
100	100	9070T100●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
150	150	9070T150●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	200	9070T200●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
250	160	9070T250●	2	I	5.30	135	3.75	95	3.21	82	2.88	73	3.13	80	0.20 x 0.38	5 x 10
300	200	9070T300●	2	I	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	0.20 x 0.38	5 x 10
350	250	9070T350●	2	I	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	0.20 x 0.38	5 x 10
500	300	9070T500●	2	I	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	0.20 x 0.38	5 x 10

<sup>1</sup> Complete the catalog number by replacing the ● with the correct Voltage Code from the "Voltage and Connection Options" table above.

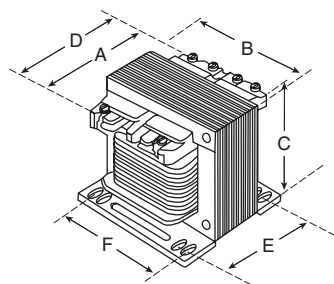


Figure 1

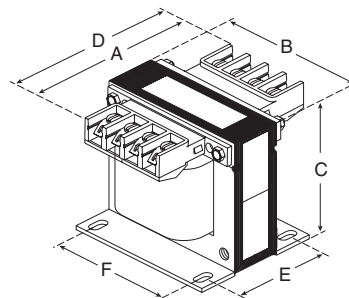


Figure 2

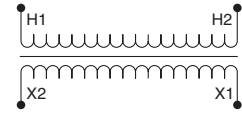
# Industrial Control Transformers

## Type T Transformers with 24 Volt Secondary

### 24 Volt Secondary

#### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D7	120	24	Connect to H1 and H2	Connect to X1 and X2
D14	208	24		
D16	600	24		
D25	277	24		
D88	380	24		
D112	230	24		



#### Dimensions

VA		Catalog Number <sup>1</sup>	Fig.	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	25	9070T25●	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
50	50	9070T50●	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
75	75	9070T75●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
100	100	9070T100●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
150	150	9070T150●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	200	9070T200●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
250	160	9070T250●	2	I	5.30	135	3.75	95	3.21	82	2.88	73	3.13	80	0.20 x 0.38	5 x 10
300	200	9070T300●	2	I	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	0.20 x 0.38	5 x 10
350	250	9070T350●	2	I	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	0.20 x 0.38	5 x 10
500	300	9070T500●	2	I	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	0.20 x 0.38	5 x 10

<sup>1</sup> Complete the catalog number by replacing the ● with the correct Voltage Code from the "Voltage and Connection Options" table above.

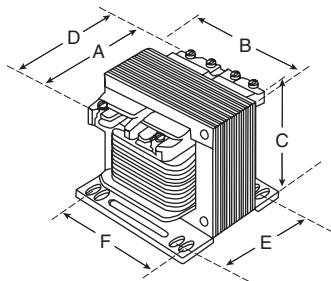


Figure 1

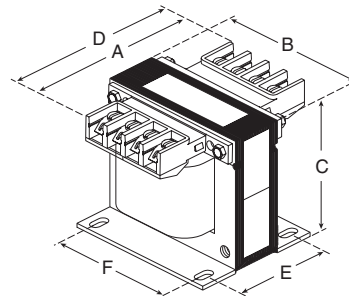


Figure 2



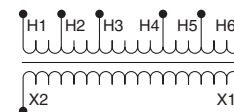
# Industrial Control Transformers

## Type T Transformers with 24 Volt Secondary

### 24 Volt Secondary

#### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D19	208 240 277 380 480	24	208: Connect to H1 and H2 240: Connect to H1 and H3 277: Connect to H1 and H4 380: Connect to H1 and H5 480: Connect to H1 and H6	Connect to X1 and X2



#### Dimensions

VA		Catalog Number <sup>1</sup>	Figure	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
50	50	9070T50D19	4	III	4.43	113.0	3.38	85.9	2.89	73.4	2.38	61.0	2.81	71.4	0.20 x 0.48	5 x 12
75	75	9070T75D19	4	III	4.70	119.4	3.75	95.3	3.20	81.3	2.88	73.2	3.13	80.0	0.20 x 0.38	5 x 10
100	100	9070T100D19	4	III	4.70	119.4	3.75	95.3	3.20	81.3	2.88	73.2	3.13	80.0	0.20 x 0.38	5 x 10
150	150	9070T150D19	4	III	4.70	119.4	3.75	95.3	3.20	81.3	2.88	73.2	3.13	80.0	0.20 x 0.38	5 x 10
200	200	9070T200D19	4	III	4.74	120.4	4.50	114.3	3.84	98.0	2.56	65.0	3.75	95.3	0.20 x 0.38	5 x 10
250	160	9070T250D19	4	III	5.11	129.8	4.50	114.3	3.84	98.0	3.00	76.2	3.75	95.3	0.20 x 0.38	5 x 10
300	200	9070T300D19	4	III	5.11	129.8	4.50	114.3	3.84	98.0	3.00	76.2	3.75	95.3	0.20 x 0.38	5 x 10
350	250	9070T350D19	4	III	5.49	139.4	4.50	114.3	3.84	98.0	3.56	90.4	3.75	95.3	0.20 x 0.38	5 x 10
500	300	9070T500D19	4	III	5.61	142.5	5.25	133.4	4.51	114.6	3.43	87.1	4.38	111.3	0.28 x 0.56	7 x 14

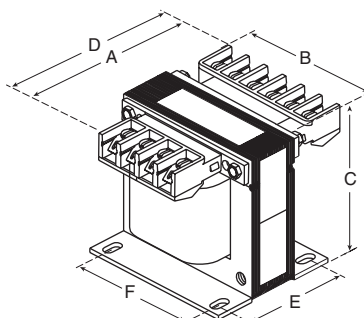


Figure 4

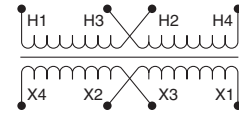
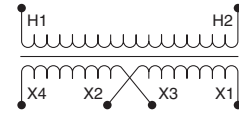
# Industrial Control Transformers

## Type T Transformers with 24 Volt Secondary

### Type T Units with Dual 12/24 Volt Secondary

#### Voltage and Connection Options

Voltage Code	Voltages		Connections		
	Primary	Secondary	Primary	Secondary	
D13	120	12/24	Connect to H1 and H2		
D36	600		Connect to H1 and H2		
D54	120 x 240		120:	Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4	12: Connect to X1 and X4 Jumper X1 with X3 Jumper X2 with X4
			240:	Connect to H1 and H4 Jumper H2 with H3	
D59	240 x 480	240:	Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4	24: Connect to X1 and X4 Jumper X2 with X3	
		480:	Connect to H1 and H4 Jumper H2 with H3		



#### Dimensions

VA		Catalog Number <sup>1</sup>	Fig.	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	25	9070T25●	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
50	50	9070T50●	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
75	75	9070T75●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
100	100	9070T100●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
150	150	9070T150●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	200	9070T200●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
250	160	9070T250●	2	I	5.30	135	3.75	95	3.21	82	2.88	73	3.13	80	0.20 x 0.38	5 x 10
300	200	9070T300●	2	I	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	0.20 x 0.38	5 x 10
350	250	9070T350●	2	I	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	0.20 x 0.38	5 x 10
500	300	9070T500●	2	I	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	0.20 x 0.38	5 x 10

<sup>1</sup> Complete the catalog number by replacing the ● with the correct Voltage Code from the "Voltage and Connection Options" table above.

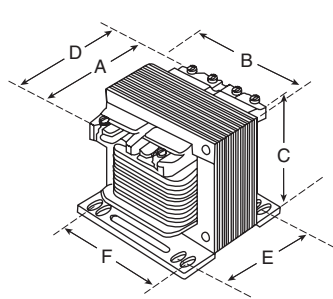


Figure 1

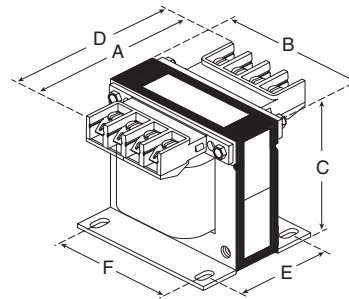


Figure 2

**MULTIPLE SECONDARY**

Designed to meet the needs for both 24 V control and 120 V control. Available in the 9070 Type T product line, with all the type T features.

Tapped Secondary D15: 24 V rated for 20% capacity and 120 V rated for 80% capacity when simultaneous loading, or 100% loading when 120 V only.

20% rating at 24 V or 100% rating at 120 V gives equal output current from the device.

<b>VA</b>	<b>24 V amps</b>	<b>120 V amps</b>
50	.416	.416
75	.625	.625
100	.833	.833
150	1.25	1.25
200	1.67	1.67
250	2.08	2.08
300	2.5	2.5
350	2.9	2.9
500	4.17	4.17
750	6.25	6.25
1000	8.3	8.3
1500	12.5	12.5
2000	16.7	16.7
3000	25	25
5000	41.7	41.7

Tapped Secondary D65: Both outputs fully rated for non-simultaneous loading, and simultaneous rated for any combination that does not exceed the nameplate VA rating.

Separate Windings Options: All voltage codes offer fully rated non-simultaneous loading, and simultaneous rated for any combination that does not exceed the nameplate VA rating.

Features of separate windings:

1. Allows two isolated control circuits, 24 V and 120 V, from the same device
2. Wire sizing for circuits for each voltage not highest current for common when simultaneous loading. (no common)
3. If a common is required, it can be obtained with a jumper kit.

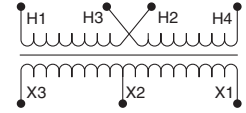
# Industrial Control Transformers

## Multiple Secondary

### Type T Units with Dual 24/120 Volt Secondary (Tapped Units)

#### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D15	240 x 480	23/110 24/115 25/120	240: Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4  480: Connect to H1 and H4 Jumper H2 with H3	23 or 24 or 25: Connect to X1 and X2  110 or 115 or 120: Connect to X1 and X3



#### Dimensions

VA		Catalog Number	Fig.	Acc. Key	A		B		C		E		F		Slots		120 Only Max VA	24 Only Max VA	Simultaneous Loading Max UL VA	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	UL	UL
50	50	9070T50D15	1	I	3.09	79	3.00	76	2.58	66	2.00	51	2.50	64	.20 x .38	5 x 10	50	10	40	10
75	75	9070T75D15	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	.20 x .48	5 x 12	75	15	60	10
100	100	9070T100D15	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	.20 x .48	5 x 12	100	20	80	20
150	150	9070T150D15	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	150	30	120	30
200	200	9070T200D15	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	200	40	160	40
250	160	9070T250D15	2	I	5.30	135	3.75	95	3.21	82	2.88	73	3.13	80	.20 x .38	5 x 10	250	50	200	50
300	200	9070T300D15	2	I	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	.20 x .38	5 x 10	300	60	240	60
350	250	9070T350D15	2	I	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	.20 x .38	5 x 10	350	70	280	70
500	300	9070T500D15	2	I	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	.20 x .38	5 x 10	500	100	400	100
750	500	9070T750D15	2	I	5.61	143	5.25	133	4.51	115	3.43	87	4.38	111	.28 x .56	7 x 14	750	150	600	150
1000	630	9070T1000D15	2	I	6.30	160	5.25	133	4.51	115	4.31	109	4.38	111	.28 x .56	7 x 14	1000	200	800	200
1500	1000	9070T1500D15	2	I	5.92	150	7.06	179	6.17	157	4.13	105	5.81	148	.28 x .56	7 x 14	1500	300	1200	300
2000	1500	9070T2000D15	2	I	7.17	182	7.06	179	6.17	157	4.56	116	5.81	148	.28 x .56	7 x 14	2000	400	1600	400
3000	2000	9070T3000D15	2	I	6.38	162	9.00	229	7.63	194	4.63	118	7.63	194	.44 x 1.13	11 x 29	3000	600	2400	600
5000	3000	9070T5000D15	3	I	9.15	232	9.00	229	8.75	222	6.56	167	7.63	194	.44 x 1.13	11 x 29	5000	1000	4000	1000

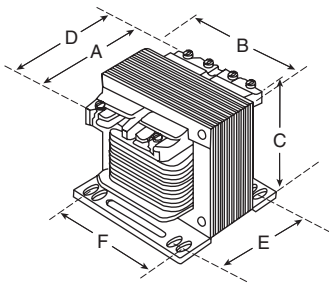


Figure 1

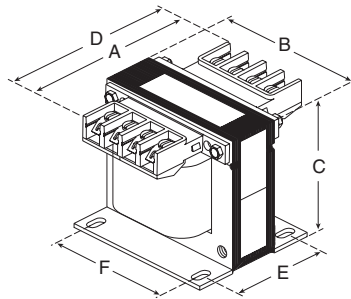


Figure 2

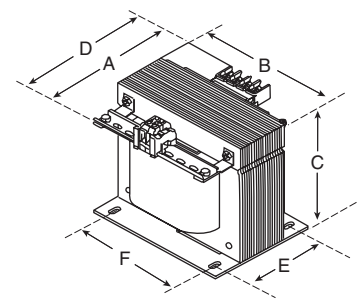


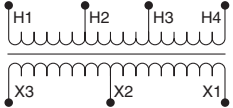
Figure 3

# Industrial Control Transformers Multiple Secondary

## Type T Units with Dual 24/120 Volt Secondary (Tapped Units)

### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D65	200/220/440 208/230/460 217/240/480	23/110 24/115 25/120	200 or 208 or 217: Connect to H1 and H2 220 or 230 or 240: Connect to H1 and H3 440 or 460 or 480: Connect to H1 and H4	23 or 24 or 25: Connect to X1 and X2 110 or 115 or 120: Connect to X1 and X3



### Dimensions

VA		Catalog Number	Fig.	Acc. Key	A		B		C		E		F		Slots		115 Only Max VA	24 Only Max VA	Simultaneous Loading Max UL VA	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm			IN	mm
50	50	9070T50D65	1	II	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	.20 x .48	5 x 12	50	50	Any combination that does not exceed Primary Max VA For example, T350 200VA (120V) 150VA (24V)	
75	75	9070T75D65	1	II	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	75	75		
100	100	9070T100D65	1	II	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	100	100		
150	150	9070T150D65	1	II	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	150	150		
200	200	9070T200D65	2	II	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	.20 x .38	5 x 10	200	200		
250	160	9070T250D65	2	II	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	.20 x .38	5 x 10	250	250		
300	200	9070T300D65	2	II	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	.20 x .38	5 x 10	300	300		
350	250	9070T350D65	2	II	5.61	143	5.25	133	4.51	115	3.43	87	4.38	111	.28 x .56	7 x 14	350	350		
500	300	9070T500D65	2	II	5.61	143	5.25	133	4.51	115	3.43	87	4.38	111	.28 x .56	7 x 14	500	500		

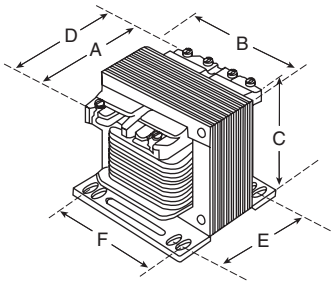


Figure 1

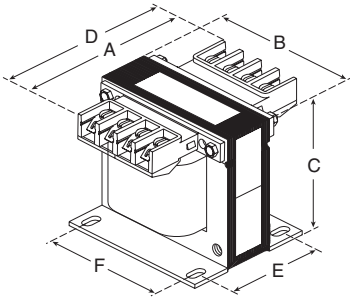


Figure 2

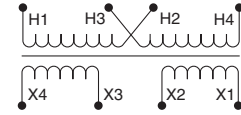
# Industrial Control Transformers

## Multiple Secondary

### Type T Units with Dual 24/120 Volt Secondary (Separate Windings)

#### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D114	220 x 440 230 x 460 240 x 480	23/110 24/115 25/120	220/230/240: Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4  440/460/480: Connect to H1 and H4 Jumper H2 with H3	23/24/25: Connect to X1 and X2  110/115/120: Connect to X3 and X4



#### Dimensions

VA		Catalog Number	Fig.	Acc. Key	A		B		C		E		F		Slots		115 Only Max VA	24 Only Max VA	Simultaneous Loading Max UL VA	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	UL	UL
50	50	9070T50D114	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	.20 x .48	5 x 12	50	50	Any combination that does not exceed Primary Max VA For example, T350 200VA (120V) 150VA (24V)	
75	75	9070T75D114	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	75	75		
100	100	9070T100D114	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	100	100		
150	150	9070T150D114	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	150	150		
200	200	9070T200D114	2	I	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	.20 x .38	5 x 10	200	200		
250	160	9070T250D114	2	I	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	.20 x .38	5 x 10	250	250		
300	200	9070T300D114	2	I	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	.20 x .38	5 x 10	300	300		
350	250	9070T350D114	2	I	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	.20 x .38	5 x 10	350	350		
500	300	9070T500D114	2	I	5.61	143	5.25	133	4.51	115	3.43	87	4.38	111	.28 x .56	7 x 14	500	500		

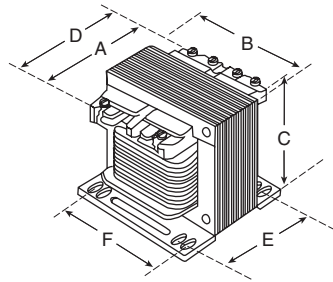


Figure 1

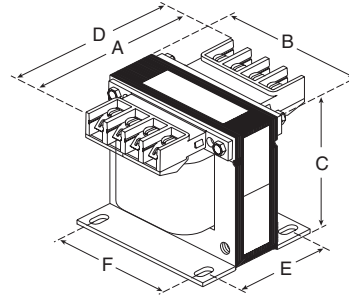


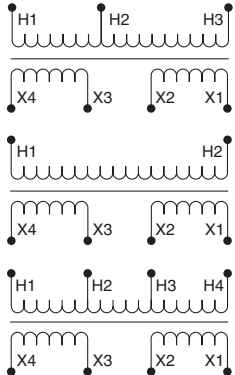
Figure 2

# Industrial Control Transformers Multiple Secondary

## Type T Units with Dual 24/120 Volt Secondary (Separate Windings)

### Voltage and Connection Options

Voltage Code	Voltages		Connections			
	Primary	Secondary	Primary		Secondary	
D115	208/277	24/115	208: Connect to H1 and H2 277: Connect to H1 and H3	24: Connect to X1 and X2 115: Connect to X3 and X4		
D116	550 575 600	23/110 24/115 25/120	Connect to H1 and H2	23/24/25: Connect to X1 and X2 110/115/120: Connect to X3 and X4		
D119	380/400/415	24/115	380: Connect to H1 and H2 400: Connect to H1 and H3 415: Connect to H1 and H4	24: Connect to X1 and X2 115: Connect to X3 and X4		



### Dimensions

VA	Catalog Number <sup>1</sup>	Fig.	Acc. Key	A		B		C		E		F		Slots		115 Only Max VA	24 Only Max VA	Simultaneous Loading Max UL VA	
				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	UL	UL
50	50	9070T50●	1	I	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	.20 x .48	5 x 12	50	50	Any combination that does not exceed Primary Max VA For example, T350 200VA (120V) 150VA (24V)
75	75	9070T75●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	75	75	
100	100	9070T100●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	100	100	
150	150	9070T150●	1	I	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	150	150	
200	200	9070T200●	2	I	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	.20 x .38	5 x 10	200	200	
250	160	9070T250●	2	I	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	.20 x .38	5 x 10	250	250	
300	200	9070T300●	2	I	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	.20 x .38	5 x 10	300	300	
350	250	9070T350●	2	I	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	.20 x .38	5 x 10	350	350	
500	300	9070T500●	2	I	5.61	143	5.25	133	4.51	115	3.43	87	4.38	111	.28 x .56	7 x 14	500	500	

<sup>1</sup> Complete the catalog number by replacing the ● with the correct Voltage Code from the "Voltage and Connection Options" table above.

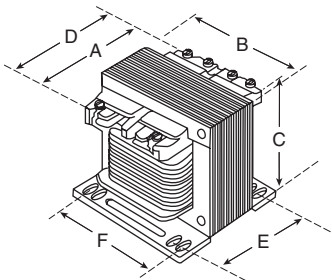


Figure 1

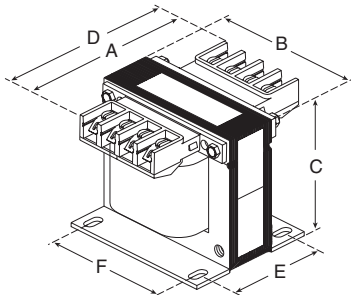


Figure 2

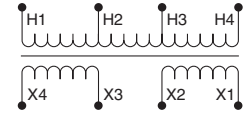
# Industrial Control Transformers

## Multiple Secondary

### Type T Units with Dual 24/120 Volt Secondary (Separate Windings)

#### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D117	200/220/400	23/110	200/208/217: Connect to H1 and H2	23/24/25: Connect to X1 and X2 110/115/120: Connect to X3 and X4
	208/230/460	24/115	220/230/240: Connect to H1 and H3	
	217/240/480	25/120	400/460/480: Connect to H1 and H4	
D118	220/440/550	23/110	220/230/240: Connect to H1 and H2	110/115/120: Connect to X3 and X4
	230/460/575	24/115	440/460/480: Connect to H1 and H3	
	240/480/600	25/120	550/575/600: Connect to H1 and H4	



#### Dimensions

VA		Catalog Number <sup>1</sup>	Fig.	Acc. Key	A		B		C		E		F		Slots		115 Only Max VA	24 Only Max VA	Simultaneous Loading Max UL VA	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	UL	UL
50	50	9070T50●	1	II	3.34	85	3.38	86	2.89	73	2.38	61	2.81	71	.20 x .48	5 x 12	50	50	Any combination that does not exceed Primary Max VA For example, T350 200VA (120V) 150VA (24V)	
75	75	9070T75●	1	II	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	75	75		
100	100	9070T100●	1	II	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	100	100		
150	150	9070T150●	1	II	3.59	91	3.75	95	3.20	81	2.88	73	3.13	80	.20 x .38	5 x 10	150	150		
200	200	9070T200●	2	II	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	.20 x .38	5 x 10	200	200		
250	160	9070T250●	2	II	4.74	120	4.50	114	3.84	98	2.56	65	3.75	95	.20 x .38	5 x 10	250	250		
300	200	9070T300●	2	II	5.11	130	4.50	114	3.84	98	3.00	76	3.75	95	.20 x .38	5 x 10	300	300		
350	250	9070T350●	2	II	5.49	139	4.50	114	3.84	98	3.56	90	3.75	95	.20 x .38	5 x 10	350	350		
500	300	9070T500●	2	II	5.61	143	5.25	133	4.51	115	3.43	87	4.38	111	.28 x .56	7 x 14	500	500		

<sup>1</sup> Complete the catalog number by replacing the ● with the correct Voltage Code from the "Voltage and Connection Options" table above.

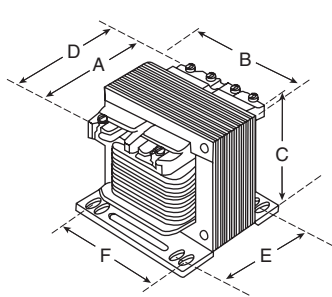


Figure 1

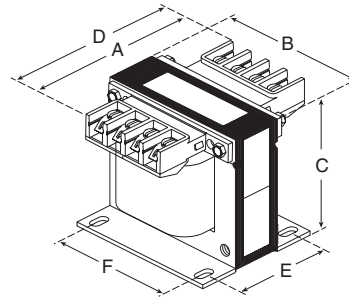


Figure 2



# Industrial Control Transformers Type T Transformers

## TYPE T PERFORMANCE DATA

Catalog Number	Core Watts	Coil Watts	FL Total Watts	Reg 1.0PF	Eff 100%	%IZ	X/R	BTU/hr					Inrush (x FL RMS)	
								100%	75%	50%	25%	No Load	60HZ	50HZ
9070T25D1	4.5	3.7	8.2	3.81	75.3	3.84	10.9	28	22	19	16	15	25.0	30.0
9070T50D1	4.5	7.1	11.6	7.97	81.1	8.01	10.5	40	29	21	17	15	24.1	28.9
9070T75D1	7.3	6.8	14.1	4.94	84.2	5.00	15.9	48	38	31	26	25	28.0	33.6
9070T100D1	7.3	10.2	17.5	6.82	85.1	6.9	15.4	60	45	34	27	25	26.8	32.2
9070T150D1	10.5	10.8	21.3	4.77	87.6	5.25	20.2	73	57	45	38	36	31.2	37.4
9070T200D1	10.5	19.5	30.0	7.70	86.9	7.83	18.0	102	73	53	40	36	19.7	23.7
9070T250D1	14.1	17.8	31.9	5.73	88.7	5.73	3.5	109	82	63	52	48	22.9	27.5
9070T300D1	13.3	18.8	32.1	5.60	90.3	5.62	6.0	110	82	61	49	45	11.0	13.2
9070T350D1	16.4	19.9	36.3	5.07	90.6	5.08	4.9	124	94	73	60	56	16.0	19.2
9070T500D1	20.7	30.6	51.3	5.47	90.7	5.48	5.3	175	129	97	77	71	12.9	15.5
9070T750D1	30.8	37.9	68.7	4.57	91.6	4.58	5.7	235	178	138	113	105	17.4	20.9
9070T1000D1	35.4	51.3	86.7	4.83	92.0	4.84	6.0	296	219	165	132	121	10.3	12.3
9070T1500D1	51.5	51.3	102.8	3.25	93.6	3.30	8.0	351	274	220	187	176	10.5	12.6
9070T2000D1	81.8	50.0	131.8	2.31	93.8	2.31	6.3	450	375	322	290	279	15.6	18.8
9070T3000D1	81.9	67.2	149.1	2.24	96.1	2.04	9.3	532	415	338	294	285	7.7	9.3
9070T5000D1	143.3	83.7	227.0	1.67	95.6	1.52	7.2	781	648	558	507	495	8.5	10.2
9070T50D3	4.5	7.1	11.6	7.97	81.1	8.01	10.5	40	29	21	17	15	24.1	28.9
9070T75D3	7.3	6.8	14.1	4.94	84.2	5.00	15.9	48	38	31	26	25	28.0	33.6
9070T100D3	7.3	10.2	17.5	6.82	85.1	6.90	15.4	60	45	34	27	25	26.8	32.2
9070T150D3	10.5	10.8	21.3	4.77	87.6	5.25	20.2	73	57	45	38	36	31.2	37.4
9070T200D3	10.5	19.5	30.0	7.70	86.9	7.83	18.0	102	73	53	40	36	19.7	23.7
9070T250D3	14.1	17.8	31.9	5.73	88.7	5.73	3.5	109	82	63	52	48	22.9	27.5
9070T300D3	13.3	18.8	32.1	5.60	90.3	5.62	6.0	110	82	61	49	45	11.0	13.2
9070T350D3	16.4	19.9	36.3	5.07	90.6	5.08	4.9	124	94	73	60	56	16.0	19.2
9070T500D3	20.7	30.6	51.3	5.47	90.7	5.48	5.3	175	129	97	77	71	12.9	15.5
9070T750D3	30.8	37.9	68.7	4.57	91.6	4.58	5.7	235	178	138	113	105	17.4	20.9
9070T1000D3	35.4	51.3	86.7	4.83	92.0	4.84	6.0	296	219	165	132	121	10.3	12.3
9070T1500D3	51.5	51.3	102.8	3.25	93.6	3.30	8.0	351	274	220	187	176	10.5	12.6
9070T2000D3	81.8	50.0	131.8	2.31	93.8	2.31	6.3	450	375	322	290	279	15.6	18.8
9070T3000D3	81.9	74.5	156.4	2.37	95	2.39	11.9	534	423	343	296	280	7.7	9.3
9070T5000D3														
9070T50D20	7.3	6.8	14.1	4.94	84.2	5.00	15.9	48	38	31	26	25	28.0	33.6
9070T75D20	7.3	10.2	17.5	6.82	85.1	6.90	15.4	60	45	34	27	25	26.8	32.2
9070T100D20	10.5	10.8	21.3	4.77	87.6	5.25	20.2	73	57	45	38	36	31.2	37.4
9070T150D20	10.5	19.5	30.0	7.70	86.9	7.83	18.0	102	73	53	40	36	19.7	23.7
9070T200D20	14.1	17.8	31.9	5.73	88.7	5.73	3.5	109	82	63	52	48	22.9	27.5
9070T250D20	13.3	18.8	32.1	5.60	90.3	5.62	6.0	110	82	61	49	45	11.0	13.2
9070T300D20	16.4	19.9	36.3	5.07	90.6	5.08	4.9	124	94	73	60	56	16.0	19.2
9070T350D20	20.7	30.6	51.3	5.47	90.7	5.48	5.3	175	129	97	77	71	12.9	15.5
9070T500D20	30.8	37.9	68.7	4.57	91.6	4.58	5.7	235	178	138	113	105	17.4	20.9
9070T750D20	35.4	51.3	86.7	4.83	92.0	4.84	6.0	296	219	165	132	121	10.3	12.3
9070T1000D20	51.5	51.3	102.8	3.25	93.6	3.30	8.0	351	274	220	187	176	10.5	12.6
9070T1500D20	81.8	50.0	131.8	2.31	93.8	2.31	6.3	450	375	322	290	279	15.6	18.8
9070T2000D20	81.9	74.5	156.4	2.37	95.0	2.39	11.9	534	423	343	296	280	7.7	9.3
9070T3000D20	143.3	84.8	228.1	1.63	95.6	1.64	11.8	779	652	562	507	489	8.5	10.2

**Industrial Control Transformers**  
**Type T Transformers**

**TYPE T - SPECIAL QUOTE REQUEST SHEET**

Determine VA by Load Requirements

**Dual or CT Secondary**

Secondary Voltages: \_\_\_\_ x \_\_\_\_ or \_\_\_\_ CT

Amps at higher of the two voltages \_\_\_\_\_

**Tapped Unit**

**Separate Windings**

Secondary 1: \_\_\_\_\_ Volts \_\_\_\_\_ Amps

Secondary 1: \_\_\_\_\_ Volts \_\_\_\_\_ Amps

Secondary 2: \_\_\_\_\_ Volts \_\_\_\_\_ Amps

Secondary 2: \_\_\_\_\_ Volts \_\_\_\_\_ Amps

Secondary 3: \_\_\_\_\_ Volts \_\_\_\_\_ Amps

Secondary 3: \_\_\_\_\_ Volts \_\_\_\_\_ Amps

Secondary 4: \_\_\_\_\_ Volts \_\_\_\_\_ Amps

Secondary 5: \_\_\_\_\_ Volts \_\_\_\_\_ Amps

**Secondary Simultaneous Loading?**

If Yes: VA Sizing \_\_\_\_\_

S1: V x A + S2: V x A + S3: V x A + S4: V x A + S5: V x A

If No: VA Sizing \_\_\_\_\_

Largest VA of the secondary listed above: V x A

**Dual Primary** \_\_\_\_ x \_\_\_\_ Volts

**Tapped Unit**

Primary 1: \_\_\_\_\_ Volts

Primary 2: \_\_\_\_\_ Volts

Primary 3: \_\_\_\_\_ Volts

Primary 4: \_\_\_\_\_ Volts

Primary 5: \_\_\_\_\_ Volts

**Technical Data**

Regulation Requirements: \_\_\_\_\_ VA @ \_\_\_\_\_ PF for \_\_\_\_\_% Voltage Drop

BTU Requirements: \_\_\_\_\_ No Load Max \_\_\_\_\_ Total Full Load Max

**Dimensions**

If dimensions are critical, provide them below (or supply a drawing with dimensions clearly marked):

Maximum size in inches: \_\_\_\_ H \_\_\_\_ W \_\_\_\_ D

**All units will have standard Type T features:**

Temperature Rise, Insulation Material, Terminal Board, cULus and CE Marked,  
 Footprints for VA frame created above.

# Industrial Control Transformers Type EO Transformers

## TYPE EO TRANSFORMERS

### Type EO VA Ratings

Type	VA	
	60 Hz	50 Hz
EO17	25	25
EO1	50	35
EO18	75	75
EO2	100	70
EO3	150	120
EO19	200	200
EO15	250	200
EO4	300	240
EO16	350	280
EO51	500	400
EO61	750	500
EO71	1000	900
EO81	1500	1300
EO91	2000	1800
EO10	3000	3000
EO11	5000	5000

The Type EO units are designed with exceptional voltage regulation. These control transformers are constructed using traditional materials and manufacturing techniques, and are designed for 25 VA to 5000 VA with a 55° C temperature rise. When exceptional regulation and very low temperature rise are an absolute necessity, choose the Type EO units.

### Type EO Listings

Listing	File	VA Range
UL	E61239	25–5000
CSA	LR37055, Guide 184-N-90	25–5000



### Selection Guide

1. Determine inrush and sealed VA of each coil in the control circuit and VA of all other components.
2. Total all sealed VA of all operating coils and other loads VA (determines minimal VA size required for the circuit).
3. Total the inrush VA of all coils that are starting at the same time and all loads and coils that are running (using the regulation chart to give possible units to be used).
4. Take VA size from step 2, go to standard VA size in chart below. Make sure inrush VA from chart is greater than total VA from step 3. If not, go to next larger VA size and repeat.

#### Example:

This example assumes the following:

- Two NEMA size 0 contactors do not start together, but one could be ON when the other starts.
  - One NEMA size 2 contactor can start with either of the other contactors.
  - One pilot light at 2 VA
1. VA and inrush are:  
NEMA 0: sealed 27 VA; inrush 245 VA  
NEMA 2: sealed 37 VA; inrush 311 VA; pilot light 2 VA
  2. Total VA: 27 + 27 + 37 + 2 = 93 VA
  3. Total inrush VA: 245 + 311 + 27 + 2 = 582 VA
  4. From Regulation Chart for Type EO at right below:  
100 VA minimum unit; inrush 606 VA will not work at 90%  
150 VA (next standard size); inrush 755 VA will work at 95%

If your supply voltage is stable and fluctuates less than 5%, we recommend you use the 90% secondary voltage column. If your supply voltage is not stable and fluctuates more than 10%, we recommend you use the 95% secondary voltage column. We recommend that you never use the 85% secondary voltage column since magnetic devices lose life expectancy if they are continuously started at 85% of rated voltage.

### Regulation Chart for Type EO

VA	Secondary Voltage					
	Inrush UL VA at 20% Power Factor			Inrush UL VA at 40% Power Factor		
	95%	90%	85%	95%	90%	85%
25	95	...	146	60	...	119
50	164	213	277	123	168	225
75	387	487	622	284	375	798
100	479	606	770	346	463	613
150	755	1177	1532	567	930	1252
200	1260	1883	2419	910	1462	1950
250	1530	2327	2995	1115	1811	2419
300	2030	2981	3800	1455	2290	3038
350	2920	4586	5981	2180	3637	4903
500	4230	5984	7707	3120	4661	6229
750	7430	11460	14736	5380	8907	11891
1000	10300	16873	21734	7450	13145	17571
1500	19200	30042	39217	14500	23859	32179
2000	27750	45194	60022	21750	36901	50994
3000	31800	82333	108205	26750	66072	89509
5000	86100	148768	202077	72600	126887	175552

# Industrial Control Transformers

## Type EO Transformers

Use the following tables to quickly find a Type EO transformer for your specific application. First, find your source and load voltages in either the 120 or 24 Volt table below. Then, go to the indicated pages for details on the transformer(s) matching those voltages.

### Type EO Transformers for 120 Volt Loads

Source Voltage	Load Voltage	Voltage Code(s)	Go To Page(s)
110	110	D24	30
115	115	D24	30
120	120	D24	30
200	115	D93	30
208	120	D3	30
220	110	D1	29
230	115	D1	29
240	120	D1	29
277	120	D4	30
380	110	D6	30
400	120	D103	30
415	110	D17	30
440	110	D1	29
460	115	D1	29
480	120	D1	29
550	110	D5	30
575	115	D5	30
600	120	D5	30

### Type EO Transformers for 24 Volt Loads

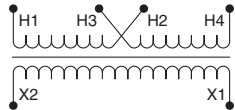
Source Voltage	Load Voltage	Voltage Code(s)	Go To Page(s)
115	24	D89	31
120	24	D23, D7	31, 32
208	24	D14	20
230	24	D89, D112	31, 32
240	24	D2, D23	31, 31
277	24	D25	32
380	24	D88	32
460	24	D92	31
480	24	D2	31
600	24	D16	32

# Industrial Control Transformers Type EO Transformers

## 120 Volt Control Secondary

### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D1	220 x 440 230 x 460 240 x 480	110 115 120	220/230/240: Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4 440/460/480: Connect to H1 and H4 Jumper H2 with H3 <sup>1</sup>	Connect to X1 and X2



<sup>1</sup> Jumper kit (two jumpers) supplied with unit.

### Dimensions

VA	Catalog Number	Figure	A		B		C		E		F		Slots	
			IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	9070EO17D1	6	3.31	84	3.00	76	2.50	64	1.75	44	2.50	64	0.20 x 0.38	5 x 10
50	9070EO1D1	6	3.31	84	3.00	76	2.50	64	2.00	51	2.50	64	0.20 x 0.38	5 x 10
75	9070EO18D1	6	3.78	96	3.38	86	2.81	71	2.19	56	2.81	71	0.20 x 0.38	5 x 10
100	9070EO2D1	6	3.78	96	3.38	86	2.81	71	2.38	60	2.81	71	0.20 x 0.38	5 x 10
150	9070EO3D1	6	4.44	113	3.75	95	3.13	80	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	9070EO19D1	6	4.81	122	4.50	114	3.75	95	2.5	63	3.75	95	0.20 x 0.38	5 x 10
250	9070EO15D1	6	5.19	132	4.50	114	3.75	95	2.88	73	3.75	95	0.20 x 0.38	5 x 10
300	9070EO04D1	6	5.56	141	4.50	114	3.75	95	3.81	97	3.75	95	0.20 x 0.38	5 x 10
350	9070EO16D1	6	6.19	157	4.50	114	3.75	95	3.81	97	3.75	95	0.20 x 0.38	5 x 10
500	9070EO51D1	6	6.56	167	5.25	133	4.38	111	3.81	97	4.38	111	0.28 x 0.56	7 x 14
750	9070EO61D1	6	7.94	202	5.25	133	4.38	111	5.13	130	4.38	111	0.28 x 0.56	7 x 14
1000	9070EO71D1	6	7.94	202	6.00	152	5.00	127	4.75	121	5.00	127	0.28 x 0.56	7 x 14
1500	9070EO81D1	6	8.59	218	7.06	179	6.03	153	5.88	149	5.81	148	0.44 x 0.69	11 x 18
2000	9070EO91D1	6	9.22	234	7.06	179	6.03	153	6.50	165	5.81	148	0.44 x 0.69	11 x 18
3000	9070EO10D1	6	9.44	239	9.00	229	7.50	191	5.88	149	7.63	194	0.44 x 0.69	11 x 18
5000	9070EO11D1	6	12.06	306	9.00	229	7.50	191	8.50	216	7.63	194	0.44 x 0.69	11 x 18

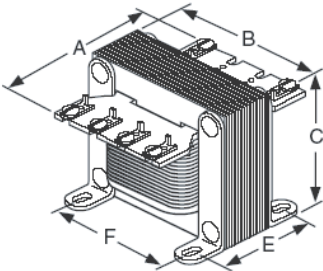


Figure 6

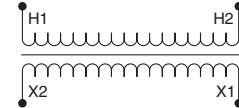
# Industrial Control Transformers

## Type EO Transformers

### 120 Volt Control Secondary

#### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D3	208	120	Connect to H1 and H2	Connect to X1 and X2
D4	277	120		
D5	550	110		
	575	115		
	600	120		
D6	380	110		
D17	415	110		
D24	110	110		
	115	115		
	120	120		
D93	200	115		
D103	400	120		



#### Dimensions

VA	Catalog Number <sup>1</sup>	Figure	A		B		C		E		F		Slots	
			IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	9070EO17●	6	3.31	84	3.00	76	2.50	64	1.75	44	2.50	64	0.20 x 0.38	5 x 10
50	9070EO1●	6	3.31	84	3.00	76	2.50	64	2.00	51	2.50	64	0.20 x 0.38	5 x 10
75	9070EO18●	6	3.78	96	3.38	86	2.81	71	2.19	56	2.81	71	0.20 x 0.38	5 x 10
100	9070EO2●	6	3.78	96	3.38	86	2.81	71	2.38	60	2.81	71	0.20 x 0.38	5 x 10
150	9070EO3●	6	4.44	113	3.75	95	3.13	80	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	9070EO19●	6	4.81	122	4.50	114	3.75	95	2.5	63	3.75	95	0.20 x 0.38	5 x 10
250	9070EO15●	6	5.19	132	4.50	114	3.75	95	2.88	73	3.75	95	0.20 x 0.38	5 x 10
300	9070EO04●	6	5.56	141	4.50	114	3.75	95	3.81	97	3.75	95	0.20 x 0.38	5 x 10
350	9070EO16●	6	6.19	157	4.50	114	3.75	95	3.81	97	3.75	95	0.20 x 0.38	5 x 10
500	9070EO51●	6	6.56	167	5.25	133	4.38	111	3.81	97	4.38	111	0.28 x 0.56	7 x 14
750	9070EO61●	6	7.94	202	5.25	133	4.38	111	5.13	130	4.38	111	0.28 x 0.56	7 x 14
1000	9070EO71●	6	7.94	202	6.00	152	5.00	127	4.75	121	5.00	127	0.28 x 0.56	7 x 14
1500	9070EO81●	6	8.59	218	7.06	179	6.03	153	5.88	149	5.81	148	0.44 x 0.69	11 x 18
2000	9070EO91●	6	9.22	234	7.06	179	6.03	153	6.50	165	5.81	148	0.44 x 0.69	11 x 18
3000	9070EO10●	6	9.44	239	9.00	229	7.50	191	5.88	149	7.63	194	0.44 x 0.69	11 x 18
5000	9070EO11●	6	12.06	306	9.00	229	7.50	191	8.50	216	7.63	194	0.44 x 0.69	11 x 18

<sup>1</sup> Complete the catalog number by replacing the ● with the correct Voltage Code from the "Voltage and Connection Options" table above.

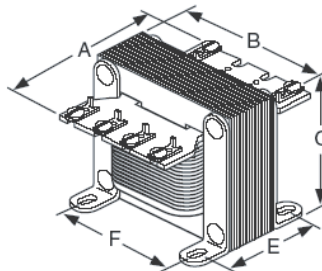
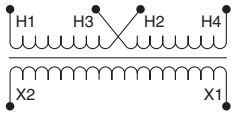


Figure 6

**24 Volt Control Secondary**

**Voltage and Connection Options**

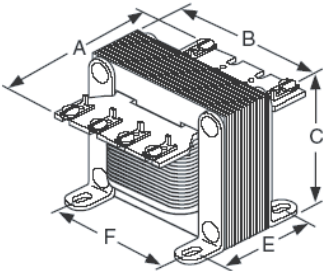
Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D2	240 x 480	24	240 or 120 or 115 or 230: Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4	Connect to X1 and X2
D23	120 x 240			
D89	115 x 230		480 or 240 or 230 or 460: Connect to H1 and H4 Jumper H2 with H3	
D92	230 x 460			



**Dimensions**

VA	Catalog Number <sup>1</sup>	Fig.	A		B		C		E		F		Slots	
			IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	9070EO17●	6	3.31	84	3.00	76	2.50	64	1.75	44	2.50	64	0.20 x 0.38	5 x 10
50	9070EO1●	6	3.31	84	3.00	76	2.50	64	2.00	51	2.50	64	0.20 x 0.38	5 x 10
75	9070EO18●	6	3.78	96	3.38	86	2.81	71	2.19	56	2.81	71	0.20 x 0.38	5 x 10
100	9070EO2●	6	3.78	96	3.38	86	2.81	71	2.38	60	2.81	71	0.20 x 0.38	5 x 10
150	9070EO3●	6	4.44	113	3.75	95	3.13	80	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	9070EO19●	6	4.81	122	4.50	114	3.75	95	2.5	63	3.75	95	0.20 x 0.38	5 x 10
250	9070EO15●	6	5.19	132	4.50	114	3.75	95	2.88	73	3.75	95	0.20 x 0.38	5 x 10
300	9070EO04●	6	5.56	141	4.50	114	3.75	95	3.81	97	3.75	95	0.20 x 0.38	5 x 10
350	9070EO16●	6	6.19	157	4.50	114	3.75	95	3.81	97	3.75	95	0.20 x 0.38	5 x 10
500	9070EO51●	6	6.56	167	5.25	133	4.38	111	3.81	97	4.38	111	0.28 x 0.56	7 x 14
750	9070EO61●	6	7.94	202	5.25	133	4.38	111	5.13	130	4.38	111	0.28 x 0.56	7 x 14
1000	9070EO71●	6	7.94	202	6.00	152	5.00	127	4.75	121	5.00	127	0.28 x 0.56	7 x 14
1500	9070EO81●	6	8.59	218	7.06	179	6.03	153	5.88	149	5.81	148	0.44 x 0.69	11 x 18

<sup>1</sup> Complete the catalog number by replacing the ● with the correct Voltage Code from the "Voltage and Connection Options" table above.



**Figure 6**

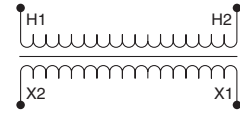
# Industrial Control Transformers

## Type EO Transformers

### 24 Volt Control Secondary

#### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D7	120	24	Connect to H1 and H2	Connect to X1 and X2
D14	208			
D16	600			
D25	277			
D88	380			
D112	230			



#### Dimensions

VA	Catalog Number <sup>1</sup>	Fig.	A		B		C		E		F		Slots	
			IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	9070EO17●	6	3.31	84	3.00	76	2.50	64	1.75	44	2.50	64	0.20 x 0.38	5 x 10
50	9070EO1●	6	3.31	84	3.00	76	2.50	64	2.00	51	2.50	64	0.20 x 0.38	5 x 10
75	9070EO18●	6	3.78	96	3.38	86	2.81	71	2.19	56	2.81	71	0.20 x 0.38	5 x 10
100	9070EO2●	6	3.78	96	3.38	86	2.81	71	2.38	60	2.81	71	0.20 x 0.38	5 x 10
150	9070EO3●	6	4.44	113	3.75	95	3.13	80	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	9070EO19●	6	4.81	122	4.50	114	3.75	95	2.5	63	3.75	95	0.20 x 0.38	5 x 10
250	9070EO15●	6	5.19	132	4.50	114	3.75	95	2.88	73	3.75	95	0.20 x 0.38	5 x 10
300	9070EO04●	6	5.56	141	4.50	114	3.75	95	3.81	97	3.75	95	0.20 x 0.38	5 x 10
350	9070EO16●	6	6.19	157	4.50	114	3.75	95	3.81	97	3.75	95	0.20 x 0.38	5 x 10
500	9070EO51●	6	6.56	167	5.25	133	4.38	111	3.81	97	4.38	111	0.28 x 0.56	7 x 14
750	9070EO61●	6	7.94	202	5.25	133	4.38	111	5.13	130	4.38	111	0.28 x 0.56	7 x 14
1000	9070EO71●	6	7.94	202	6.00	152	5.00	127	4.75	121	5.00	127	0.28 x 0.56	7 x 14
1500	9070EO81●	6	8.59	218	7.06	179	6.03	153	5.88	149	5.81	148	0.44 x 0.69	11 x 18

<sup>1</sup> Complete the catalog number by replacing the ● with the correct Voltage Code from the "Voltage and Connection Options" table above.

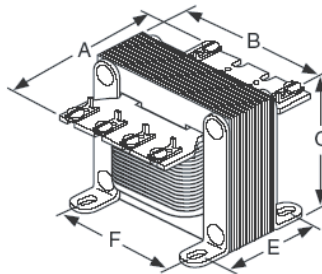


Figure 6



## Industrial Control Transformers Type EO Transformers

### TYPE EO PERFORMANCE DATA

Catalog Number	Core Watts	Coil Watts	FL Total Watts	Reg 1.0PF	Eff 100%	%IZ	X/R	BTU/hr					Inrush (x FL RMS)
								100%	75%	50%	25%	No Load	60HZ
9070EO17D1	2.25	2.25	4.50	6.37%	84.75%	7.38	0.151	15.35	10.84	9.16	8.32	7.68	44.70
9070EO1D1	3.50	4.20	7.70	7.35%	86.66%	7.69	0.158	26.27	20.66	16.20	13.19	11.94	44.70
9070EO18D1	4.25	4.85	9.10	5.63%	89.18%	5.62	0.079	31.05	25.45	20.79	17.45	14.50	32.30
9070EO2D1	4.91	7.29	12.20	6.53%	89.13%	6.21	0.056	41.63	30.86	24.07	20.59	16.75	26.50
9070EO3D1	8.53	6.77	15.30	4.40%	90.74%	4.16	0.173	52.20	43.02	36.73	32.53	29.10	52.60
9070EO19D1	8.38	8.52	16.90	4.04%	92.21%	3.72	0.111	57.66	46.69	38.68	33.48	28.59	40.60
9070EO15D1	9.83	10.37	20.20	4.10%	92.52%	3.73	0.119	68.92	55.46	45.77	39.58	33.54	39.00
9070EO4D1	6.50	10.00	16.50	3.75%	94.79%	3.61	0.075	56.30	43.20	31.47	24.85	22.18	51.10
9070EO16D1	17.75	8.85	26.60	2.85%	92.94%	2.44	0.188	90.76	80.23	69.07	62.61	60.56	59.70
9070EO51D1	17.51	14.69	32.20	2.91%	93.95%	2.72	0.13	109.87	87.55	69.97	61.54	59.74	37.20
9070EO61D1	23.67	19.53	43.20	2.72%	94.55%	2.31	0.113	147.40	114.30	91.41	83.37	80.76	43.40
9070EO71D1	18.12	15.78	33.90	2.01%	96.72%	2.02	0.125	115.67	98.130	77.00	64.93	61.83	57.10
9070EO81D1	38.51	24.89	63.40	1.66%	95.94%	1.63	0.188	216.32	180.18	153.47	138.03	131.40	37.50
9070EO91D1	53.09	30.01	83.10	1.50%	96.01%	1.25	0.300	283.54	238.94	204.12	184.07	181.14	41.80
9070EO10D1	31.36	27.64	59.00	1.20%	98.07%	1.13	0.227	201.31	178.51	137.86	114.75	107.00	36.40
9070EO11D1	61.44	45.56	107.00	0.89%	97.90%	0.79	0.514	365.08	300.12	249.03	219.66	209.63	37.20

# Industrial Control Transformers

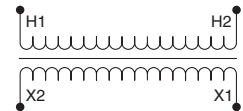
## Transformers with Leads

### TRANSFORMERS WITH LEADS

Transformers with leads instead of screw terminals are available. The lead length is 24 inches. See the following chart for VA sizes and voltage combinations. Please contact your Schneider Electric representative for further details.

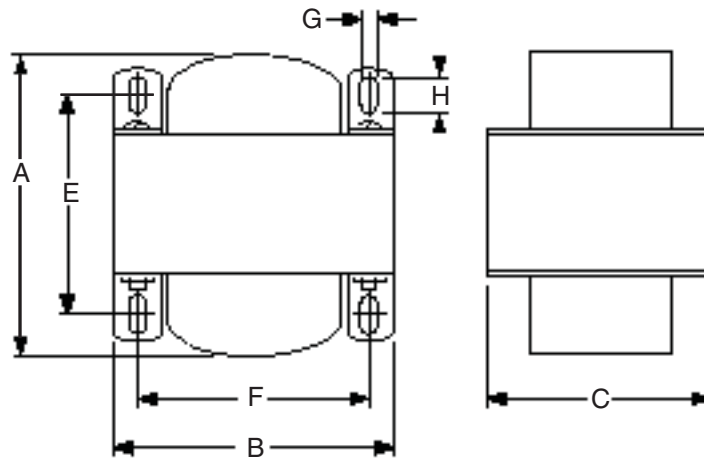
#### Voltage and Connection Options

Voltage Code	Primary Voltage	Connection	Secondary Voltage	Connection
D3	208	Connect to H1 and H2	120	Connect to X1 and X2
D4	277		120	
D5	550		110	
	575		115	
	600		120	
D6	380		110	
D8	220		110	
	230		115	
	240		120	
D9	440		110	
	460		115	
	480		120	
D17	415		110	
D24	110		110	
	115	115		
	120	120		
D93	200	115		
D103	400	120		



#### Class 9070 Type EL, KL

VA	Catalog Number	Weight		A		B		C		E		F		Slots	
		lbs.	kg	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
50	9070EL1	2.2	1	2.63	67	3.00	76	2.50	64	2.00	51	2.50	64	0.20 x 0.38	5 x 10
100	9070EL2	3.8	1.7	3.00	76	3.38	86	2.81	71	2.38	60	2.81	71	0.20 x 0.38	5 x 10
150	9070EL3	6.0	2.7	3.63	92	3.75	95	3.13	80	2.88	73	3.13	80	0.20 x 0.38	5 x 10
300	9070KL300	8.0	3.6	3.50	89	4.50	114	3.75	95	3.81	97	3.75	95	0.20 x 0.38	5 x 10



### FUSE PROTECTION

UL Standards and the National Electric Code require primary protection for Control Transformers, and many applications require secondary protection. Historically, the fuse options supplied by transformer manufacturers were designed for Line-to-Line primary (480 V) and Line-to-Neutral secondary (120 V).

Schneider Electric's new line of fuse options lets customers obtain both factory installed and field installed fuse blocks. Factory installation saves you time and labor. For both options, the transformer footprint is identical to a Type T or Type EO transformer of equivalent voltage, because the fuse block is mounted above the transformer or on the transformer terminal blocks. This frees up space normally used by separate fuse blocks.

Schneider Electric offers the most complete offering of fuse options to meet all applications for protection of the transformers and load applications. These are broken down into Line-to-Line and Line-to-Neutral protection options for both primary and secondary. Due to space limitations of the transformers, not all options are available for every VA size. Also, all fuse blocks supplied by Schneider Electric are 30 amp fuse blocks, which limits the VA for each voltage.

All primary fuse blocks supplied by Schneider Electric require rejection style fuses. Rejection style fuses offer 100,000 AIC protection to comply with UL Standards. (Non-rejection style primary fuse blocks are available by request only and can be quoted through your Schneider Electric field sales office.)

Primary			Secondary	
Voltage	VA Range without Primary Protection	VA Range with Primary Protection	Voltage	VA Range with Secondary Protection
550/575/600	25–5000 VA	25–5000 VA	277	25–5000 VA
440/460/480	25–5000 VA	25–5000 VA	220/230/240	25–5000 VA
380/400/415	25–5000 VA	25–5000 VA	208	25–5000 VA
277	25–5000 VA	25–3000 VA	110/115/120	25–2000 VA
220/230/240	25–5000 VA	25–3000 VA	48	25–1000 VA
208	25–5000 VA	25–2000 VA	24	25–500 VA
110/115/120	25–2000 VA	25–1500 VA	12	25–250 VA

#### Matrix for Choosing Proper Fuse Configuration

	Primary Line-to-Line	Primary Line-to-Neutral	Primary Without Protection
<b>Secondary Line-to-Line</b>	No factory installed option	Type TF with R12	S22
<b>Secondary Line-to-Neutral</b>	Type TF	Type TF with R11	S12
<b>Secondary Without Protection</b>	Type TF with R02	Type TF with R01	Type T product line

Primary voltages requiring Line-to-Line protection: 200/208/220/230/240/380/400/415/440/460/480/550/575/600

Primary voltages requiring line-to-neutral protection: 100/110/115/120/277/347  
Europe: 220/230/240

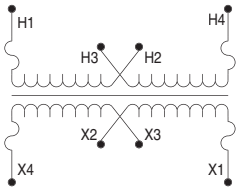
Secondary voltages requiring line-to-line protection: 208/220/230/240

Secondary voltages requiring line-to-neutral protection: 120/277  
Europe: 220/230/240

*NOTE: The following secondary voltages could be either line-to-line or line-to-neutral: 12/24/48*

# Industrial Control Transformers

## Fuse Protection



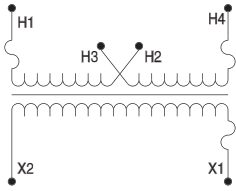
Applications for Line-to-Line Primary protection and Line-to-Line Secondary protection,

Example would be 480 to 120/240 (Voltage Code D31)

Available as field installed only for 9070 Type T

Must order one 9070FB2A(B) - Primary

Must order one 9070S22A(B) - Secondary



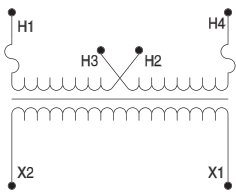
Application for Line-to-Line Primary protection and Line-to-Neutral Secondary protection

Example would be 480 to 120 (Voltage Code D1)

Available as factory and field installed

Factory installed - 9070 Type TF or 9070 Type EOF

Field installed - 9070 Type T: 9070FB3A or 9070FB3B



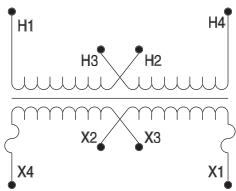
Application for Line-to-Line Primary protection and no secondary protection

Example would be 480 to 24 (voltage Code D2)

Available as factory and field installed

Factory installed - 9070 Type TF with R02 suffix or 9070 Type EOF with R02 suffix

Field installed - 9070 Type T: 9070FB2A or 9070FB2B



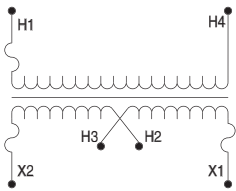
Application for no Primary protection and Line-to-Line Secondary

Example would be 480 to 120/240 (voltage Code D31)

Primary protection done elsewhere in the circuit

Factory installed - 9070 Type T or 9070 Type EO with S22 Suffix

Field installed - 9070 Type T: 9070S22A or 9070S22B

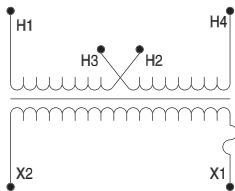


Application for Line-to-Neutral Primary and Line-to-Line Secondary

Example would be 277 to 120/240

Factory installed - 9070 Type TF with R12 suffix or 9070 Type EOF with R12 suffix

Field installed - 9070 Type T: 9070R12A or 9070R12B



Application for No Primary protection and Line-to-Neutral Secondary

Example would be 480 to 120 (voltage Code D1)

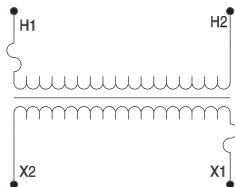
Primary protection done elsewhere in the circuit

Factory installed options

1. 9070 Type T with S12 suffix or 9070 Type EO with S12 suffix  
Secondary Fuse Block - midget fuses
2. 9070 Type T with SF25 suffix  
Secondary Fuse Block - glass type fuses
3. 9070 Type T with SF41 suffix  
Secondary Fuse Clips mounted on terminal block

Field installed options

1. 9070 Type T:
  - Midget Type Fuse Block: 9070FB1A or 9070FB1B
  - Midget Type Fuse Clips: 9070SF41A or 9070SF41B (Limited to single secondary only)
  - Glass type fuse block: 9070SF25A or 9070SF25B
  - Glass type fuse holder: 9070AP2
  - Side mounted 2-inch x 9/16-inch: 9070AP1
2. 9070 Type EO:
  - Side mounted 2-inch x 9/16-inch: 9070AP1
  - Glass type fuse holder: 9070AP2
  - Midget type fuse clips: 9070AP3 or 9070AP4

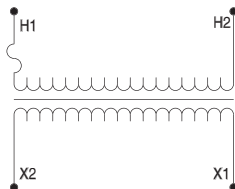


Application for Line-to-Neutral Primary and Line-to-Neutral Secondary

Example would be 277 to 120 (Voltage Code D4)

Factory installed - 9070 Type TF with R11 suffix or 9070 Type EOF with R11 suffix

Field installed - 9070 Type T: 9070R11A or 9070R11B



Application for Line-to-Neutral Primary and no secondary

Example would be 277 to 24 (Voltage Code D24)

Factory installed - 9070 Type TF with R01 suffix or 9070 Type EOF with R01 suffix

Field installed - 9070 Type T: 9070R01A or 9070R01B

# Industrial Control Transformers

## Fuse Protection

### Fuse Protection Options

Protection	Example	Factory Installed Option(s)	Field Installed Option(s)
Line-to-Line Primary and Secondary	480 to 120/240 (Voltage Code D31)	Not available	9070FB2A(B) - Primary 9070S22A(B) - Secondary
Line-to-Line Primary and Line-to-Neutral Secondary	480 to 120 (Voltage Code D1)	9070 Type TF or 9070 Type EOF	9070 Type T: 9070FB3A or 9070FB3B
Line-to-Line Primary and No Secondary	480 to 24 (Voltage Code D2)	9070 Type TF with R02 suffix or 9070 Type EOF with R02 suffix	9070 Type T: 9070FB2A or 9070FB2B
No Primary and Line-to-Line Secondary	480 to 120/240 (Voltage Code D31)	9070 Type T or 9070 Type EO with S22 Suffix	9070 Type T: 9070S22A or 9070S22B
Line-to-Neutral Primary and Line-to-Line Secondary	277 to 120/240 (Voltage Code D60)	9070 Type TF with R12 suffix or 9070 Type EOF with R12 suffix	9070 Type T: 9070R12A or 9070R12B
No Primary and Line-to-Neutral Secondary	480 to 120 (voltage Code D1)	9070 Type T with S12 suffix or 9070 Type EO with S12 suffix Secondary Fuse Block - midget fuses 9070 Type T with SF25 suffix Secondary Fuse Block - glass type fuses 9070 Type T with SF41 suffix Secondary Fuse Clips mounted on terminal block	9070 Type T: Midget type fuse block: 9070FB1A or 9070FB1B Midget type fuse clips: 9070SF41A or 9070SF41B (Limited to single secondary only) Glass type fuse block: 9070SF25A or 9070SF25B Glass type fuse holder: 9070AP2 Side mounted 2-inch x 9/16-inch: 9070AP1 9070 Type EO: Side mounted 2-in. x 9/16-in.: 9070AP1 Glass type fuse holder: 9070AP2 Midget type fuse clips: 9070AP3 or 9070AP4
Line-to-Neutral Primary and Line-to-Neutral Secondary	277 to 120 (Voltage Code D4)	9070 Type TF with R11 suffix or 9070 Type EOF with R11 suffix	9070 Type T: 9070R11 or 9070R11
Line-to-Neutral Primary and No Secondary	277 to 24 (Voltage Code D24)	9070 Type TF with R01 suffix or 9070 Type EOF with R01 suffix	9070 Type T: 9070R01A or 9070R01B

### Description of Accessory Keys

Catalog Number		Description
Accessory Key I	Accessory Keys II, III, IV	
9070FB2A	9070FB2B	Two pole fuse block with rejection clips for primary fusing, field mounted on terminal board via Fingersafe cover, 1-1/2-inch x 13/32-inch midget fuse
9070R10A	9070R10B	One pole fuse block with rejection clips for primary fusing, field mounted on terminal board via fingersafe cover, 1-1/2-inch x 13/32-inch midget fuse
9070FB3A	9070FB3B	Three pole fuse block, two poles with rejection clips for primary fusing and one pole standard clips for secondary fusing, field mounted on terminal board via Fingersafe cover, 1-1/2-inch x 13/32-inch midget fuse
9070R11A	9070R11B	Two pole fuse block, one pole with rejection clips for primary fusing and one with standard clips for secondary fusing, field mounted on terminal board via Fingersafe cover, 1-1/2-inch x 13/32-inch midget fuse
9070R12A	9070R12B	Three pole fuse block, one pole with rejection clips for primary fusing and two poles standard clips for secondary fusing, field mounted on terminal board via Fingersafe cover, 1-1/2-inch x 13/32-inch midget fuse
9070FB1A	9070FB1B	One pole fuse block with standard clips for secondary fusing, field mounted on terminal board via Fingersafe cover, 1-1/2-inch x 13/32-inch midget fuse
9070S22A	9070S22B	Two pole fuse block with standard clips for secondary fusing, field mounted on terminal board via Fingersafe cover, 1-1/2-inch x 13/32-inch midget fuse
9070SF41A	9070SF41B	Secondary Fuse Clips mounted on terminal board, prevents the use of Fingersafe covers, only field installable on single voltage secondary units 1-1/2-inch x 13/32-inch midget fuse
9070SF25A	9070SF25B	One pole fuse block with standard clips for secondary fusing, field mounted using Fingersafe cover notches, prevents the use of fingersafe covers, 1-1/4-inch x 1/4-inch glass fuse
9070AP1	9070FB	One pole fuse block with standard clips for secondary fusing, field mounted next to transformer using same mounting hardware, 2-inch x 9/16-inch fuse
907AP2	9070FB	One pole twist fuse block with standard clips for secondary fusing, field mounted next to transformer using same mounting hardware, 1-1/4-inch x 1/4-inch glass fuse

### Fuse Sizing, Description, and Catalog Number (by manufacturer)

Size	Description	Manufacturer		
		Bussman	Littlefuse	Gould-Shawmut
1-1/2-inch x 13/32-inch "Midget Fuse"	Time Delay, Rejection Type Class CC	FNQ-R LP-CC	KLDR KLMR	ATDR ATQR ATMR
1-1/2-inch x 13/32-inch "Midget Fuse"	Time Delay	FNM; FNQ	FLQ; FLM; FLA	ATQ; TRM; GFN
1-1/4-inch x 1/4-inch	Time Delay	TDC-11; MDL; MDQ; MDA	3AG: 313/315 3AB: 326/325	GDL

**NOTES:**

- These fuses are not supplied by Schneider Electric.
- This table is provided for primary fusing recommendation ONLY. Secondary fusing must be specified by the customer.
- All primary fuse options offered by Schneider Electric require rejection type fuses.

### Accessories

#### Fingersafe® Covers (not supplied with unit)

Class	Type	VA Accessory Key <sup>1</sup>			Description
		I	II	III	
9070	FSC-1 FSC-2 FSC-23	25–200 VA 250–5000 VA N/A	25–100 VA 150–5000 VA N/A	N/A N/A 25–5000 VA	2 covers per kit



<sup>1</sup> Kits must be ordered separately. Also supplied in bulk packages of 100 individual covers. Add "B" to Type number if ordering bulk (available only on FSC-1B and FSC-2B)

#### Fuse Puller—For ease in installing fuses and finger protection, used with fuse blocks with 1-1/2 in. x 13/32 in. fuses

Class	Type	VA Accessory Key			Description
		I	II	III	
9070	FP-1	ALL	ALL	ALL	Fuse puller kit may help comply with CE specifications, 3 pullers per kit.

# Industrial Control Transformers

## Fuse Protection

### Primary Fusing to Meet NEC

#### Recommended Fuse Sizes for the PRIMARY (use class CC time delay fuses) to Meet NEC

VA	120 Volts			240 Volts			480 Volts			600 Volts		
	Primary Current Amperes	Fuse Rating with Secondary Protection	Fuse Rating without Secondary Protection	Primary Current Amperes	Fuse Rating with Secondary Protection	Fuse Rating without Secondary Protection	Primary Current Amperes	Fuse Rating with Secondary Protection	Fuse Rating without Secondary Protection	Primary Current Amperes	Fuse Rating with Secondary Protection	Fuse Rating without Secondary Protection
25	0.21	1/2	1/2	0.10	1/4	1/4	0.05	1/8	1/8	0.04	1/10	1/10
50	0.41	1	1	0.21	1/2	1/2	0.10	2/10	2/10	0.08	2/10	2/10
75	0.63	1-1/2	1-1/2	0.31	6/10	6/10	0.16	3/10	3/10	0.13	3/10	3/10
100	0.83	2	2	0.42	1	1	0.21	1/2	1/2	0.17	4/10	4/10
150	1.25	3	3	0.63	1-1/2	1-1/2	0.31	6/10	6/10	0.25	6/10	6/10
200	1.67	4	4	0.83	2	2	0.42	1	1	0.33	8/10	8/10
250	2.08	5	3-2/10	1.04	2-1/2	2-1/2	0.52	1-1/2	1-1/4	0.42	1	1
300	2.50	6-1/4	4	1.25	3	3	0.63	2	1-1/2	0.50	1-1/8	1-1/8
350	2.92	7	4-1/2	1.46	3-1/2	3-1/2	0.73	2-1/2	1-8/10	0.58	1-4/10	1-4/10
500	4.17	10	6-1/4	2.08	5	3-2/10	1.04	3	2-1/2	0.83	2	2
750	6.25	15	10	3.13	7-1/2	5	1.56	3-1/2	3-1/2	1.25	3	3
1000	8.33	20	12	4.17	10	6-1/4	2.08	5	3-2/10	1.67	4	4
1500	12.50	N/A	15	6.25	15	10	3.13	7-1/2	5	2.50	6-1/4	4
2000	16.66	N/A	20	8.33	20	12	4.17	10	6 1/4	3.33	8	5

#### NOTES:

- Recommended fuse sizes per NEC Article 450-3.
- Transformers with primary only, select protection at 125%, if a standard size rating is not available, go to next higher rating.
- Transformers with primary only and current rating is less than 9 A, select protection at no more than 167%.
- Transformers with primary only and current rating is less than 2 A, select protection at no more than 300%.
- Transformers with primary and secondary, select primary protection at not more than 250% and secondary at 125%. If a standard size rating is not available, go to next higher standard rating.



**Primary Fusing to Meet CE**

**Recommended Fuse Sizes for the PRIMARY (use time delay fuses) for CE Applications**

CE VA Rating	Primary Voltage							
	120 V	208 V	240 V	277 V	380 V	416 V	480 V	600 V
25	1/2	3/10	2/10	2/10	1/10	1/10	1/10	1/10
50	1	6/10	1/2	4/10	3/10	3/10	2/10	2/10
75	1-1/2	8/10	6/10	6/10	4/10	4/10	3/10	3/10
100	2	1-1/8	1	8/10	6/10	6/10	1/2	4/10
150	3	1-8/10	1-1/2	1-1/4	8/10	8/10	6/10	6/10
160	3-2/10	1-8/10	1-6/10	1-4/10	1	8/10	8/10	6/10
200	4	2-1/4	2	1-8/10	1-1/4	1v1/8	1	8/10
250	3-2/10	3	2-1/2	2	1-6/10	1-1/2	1-1/4	1
300	4	3-1/2	3	2-1/2	1- 8/10	1-8/10	1-1/2	1-1/8
500	6-1/4	4	3-2/10	4-1/2	3-2/10	3	2-1/2	2
630	10	6	5	4-1/2	4-1/2	4-1/2	3-1/2	3
1000	12	8	6-1/4	6	4	4	3-2/10	4
1500	15	12	10	9	6-1/4	6	5	4
2000	20	12	12	12	8	8	6-1/4	5
3000	n/a	30	25	20	15	15	12	12

NOTE: Recommended fuse sizes according to testing, EN 60-742.

**Secondary Fusing to Meet NEC and CE**

**Recommended Fuse Sizes for the SECONDARY to Meet NEC and CE**

VA	24 Volts		120 Volts		240 Volts	
	Secondary Current Rating	Fuse Rating	Secondary Current Rating	Fuse Rating	Secondary Current Rating	Fuse Rating
25	1.04	8/10	0.21	3/10	0.10	15/100
50	2.08	3	0.42	6/10	0.21	3/10
75	3.13	5	0.63	1	0.31	1/2
100	4.17	6	0.83	1-1/4	0.42	6/10
150	6.25	10	1.25	2	0.63	1
200	8.33	12	1.67	2-1/2	0.83	1-1/4
250	10.42	15	2.08	3	1.04	1-3/4
300	12.50	20	2.50	4	1.25	2
350	14.58	20	2.92	5	1.46	2-1/2
500	20.83	30	4.17	7	2.08	3
750	n/a	n/a	6.25	10	3.13	5
1000	n/a	n/a	8.33	12	4.17	7
1500	n/a	n/a	12.50	15	6.25	10
2000	n/a	n/a	16.67	20	8.33	12

**NOTES:**

- Recommended fuse sizes according to NEC Article 450-3.
- Secondary select protection at 125%, if a standard size rating is not available, go to next higher standard size rating.
- Current rating is less than 9 A, select protection at not more than 167%.

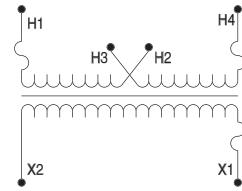
# Industrial Control Transformers

## Type TF Transformers

### 120 Volt Control Secondary—Primary and Secondary Fuse Block

#### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D1	220 x 440 230 x 460 240 x 480	110 115 120	220 or 230 or 240: Connect to H1 and H4 Jumper H1 with H3 Jumper H2 with H4 440 or 460 or 480: Connect to H1 and H4 Jumper H2 with H3	Connect to X1 and X2



#### Dimensions

VA		Catalog Number	Fig.	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	25	9070TF25D1	7	I	3.09	79	3.00	76	4.00	102	2.00	51	2.50	64	0.20 x 0.38	5 x 10
50	50	9070TF50D1	7	I	3.09	79	3.00	76	4.00	102	2.00	51	2.50	64	0.20 x 0.38	5 x 10
75	75	9070TF75D1	7	I	3.34	85	3.38	86	4.18	106	2.38	61	2.81	71	0.20 x 0.48	5 x 12
100	100	9070TF100D1	7	I	3.34	85	3.38	86	4.18	106	2.38	61	2.81	71	0.20 x 0.48	5 x 12
150	150	9070TF150D1	7	I	3.59	91	3.75	95	4.50	114	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	200	9070TF200D1	7	I	3.59	91	3.75	95	4.50	114	2.88	73	3.13	80	0.20 x 0.38	5 x 10
250	160	9070TF250D1	8	I	5.30	135	3.75	95	4.50	114	2.88	73	3.13	80	0.20 x 0.38	5 x 10
300	200	9070TF300D1	8	I	4.74	120	4.50	114	5.13	130	2.56	65	3.75	95	0.20 x 0.38	5 x 10
350	250	9070TF350D1	8	I	5.11	130	4.50	114	5.13	130	3.00	76	3.75	95	0.20 x 0.38	5 x 10
500	300	9070TF500D1	8	I	5.49	139	4.50	114	5.13	130	3.56	90	3.75	95	0.20 x 0.38	5 x 10
750	500	9070TF750D1	8	I	5.61	143	5.25	133	5.80	147	3.43	87	4.38	111	0.28 x 0.56	7 x 14
1000	630	9070TF1000D1	8	I	6.30	160	5.25	133	5.80	147	4.31	109	4.38	111	0.28 x 0.56	7 x 14
1500	1000	9070TF1500D1	8	I	5.92	150	7.06	179	7.46	190	4.13	105	5.81	148	0.28 x 0.56	7 x 14
2000	1500	9070TF2000D1	8	I	7.17	182	7.06	179	7.46	190	4.56	116	5.81	148	0.28 x 0.56	7 x 14

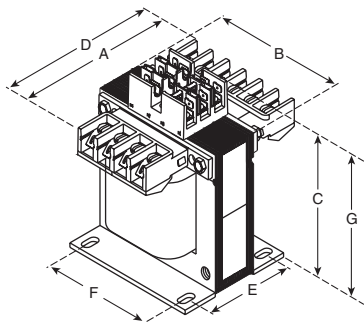


Figure 7

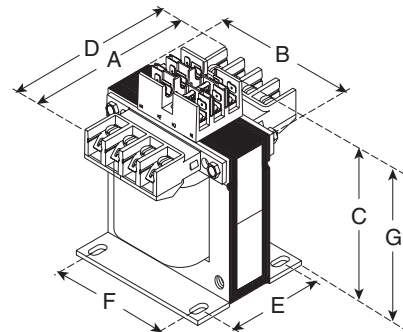


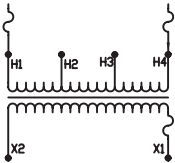
Figure 8

# Industrial Control Transformers Type TF Transformers

## MultiTap for 120 Volt Control Secondary—Primary and Secondary Fuse Block

### Voltage and Connection Options

Voltage Code	Voltages		Connections	
	Primary	Secondary	Primary	Secondary
D20	208 230 460	115	208: Connect to H1 and H2 230: Connect to H1 and H3 460: Connect to H1 and H4	Connect to X1 and X2



### Dimensions

VA		Catalog Number	Fig.	Acc. Key	A		B		C		E		F		Slots	
UL	CE				IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
25	25	9070TF25D20	7	II	3.09	79	3.00	76	4.00	66	2.00	51	2.50	64	0.20 x 0.38	5 x 10
50	50	9070TF50D20	7	II	3.34	85	3.38	86	4.18	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
75	75	9070TF75D20	7	II	3.34	85	3.38	86	4.18	73	2.38	61	2.81	71	0.20 x 0.48	5 x 12
100	100	9070TF100D20	7	II	3.59	91	3.75	95	4.50	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
150	150	9070TF150D20	7	II	3.59	91	3.75	95	4.50	81	2.88	73	3.13	80	0.20 x 0.38	5 x 10
200	200	9070TF200D20	8	II	4.70	119	3.75	95	4.50	114	2.88	73	3.13	80	0.20 x 0.38	5 x 10
250	160	9070TF250D20	8	II	4.74	120	4.50	114	5.13	98	2.56	65	3.75	95	0.20 x 0.38	5 x 10
300	200	9070TF300D20	8	II	5.11	130	4.50	114	5.13	98	3.00	76	3.75	95	0.20 x 0.38	5 x 10
350	250	9070TF350D20	8	II	5.49	139	4.50	114	5.13	98	3.56	90	3.75	95	0.20 x 0.38	5 x 10
500	300	9070TF500D20	8	II	5.61	143	5.25	133	5.80	115	3.43	87	4.38	111	0.28 x 0.56	7 x 14
750	500	9070TF750D20	8	II	6.30	160	5.25	133	5.80	115	4.31	109	4.38	111	0.28 x 0.56	7 x 14
1000	630	9070TF1000D20	8	II	5.92	150	7.06	179	7.46	157	4.13	105	5.81	148	0.28 x 0.56	7 x 14
1500	1000	9070TF1500D20	8	II	7.17	182	7.06	179	7.46	157	4.56	116	5.81	148	0.28 x 0.56	7 x 14
2000	1500	9070TF2000D20	8	II	6.38	162	9.00	229	8.92	227	4.63	118	7.63	194	0.44 x 1.13	11 x 29

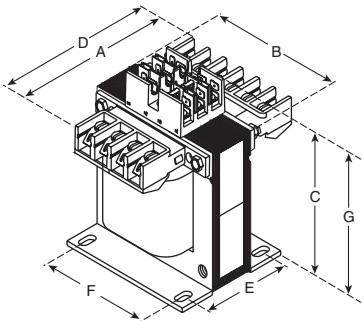


Figure 7

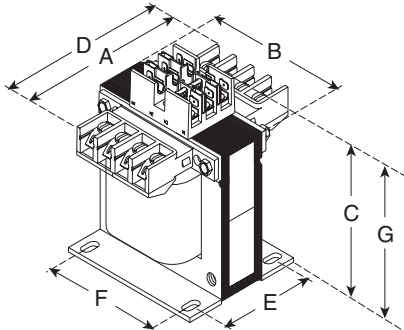


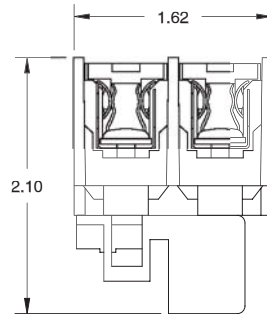
Figure 8

# Industrial Control Transformers

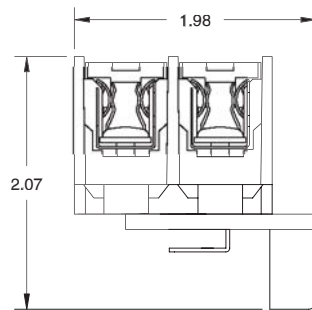
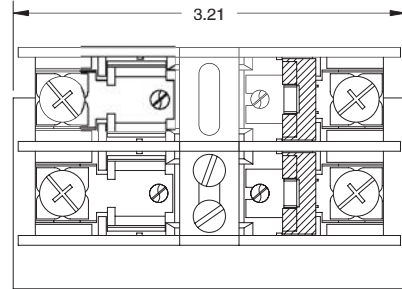
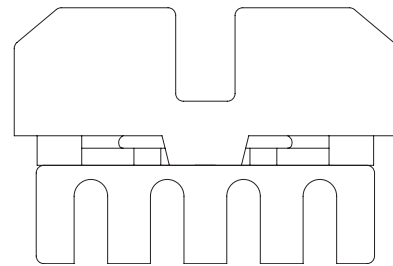
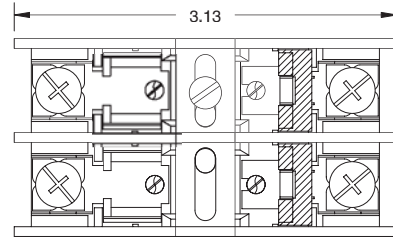
## Field Installed Fuse Options

### FIELD INSTALLED FUSE OPTIONS

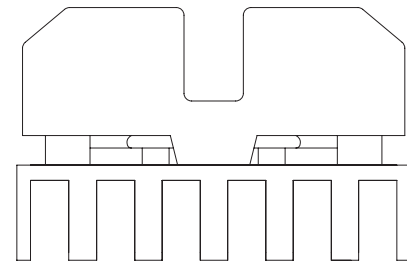
#### Primary Fusing



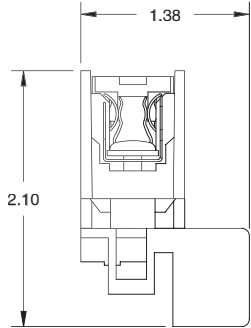
**FB2A**



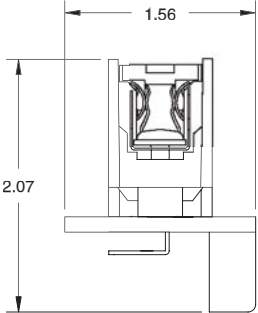
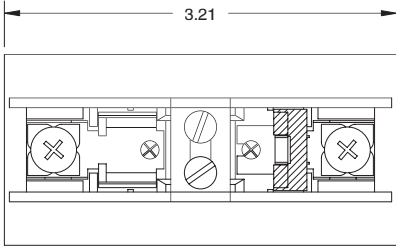
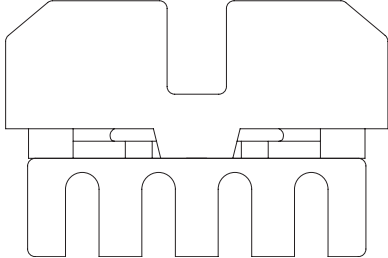
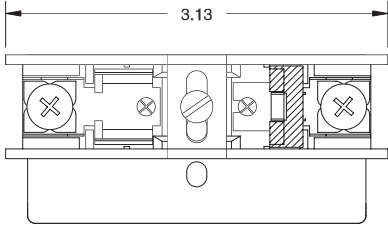
**FB2B**



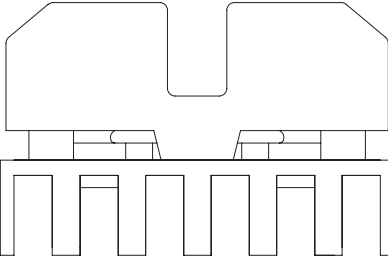
# Industrial Control Transformers Field Installed Fuse Options



R01A



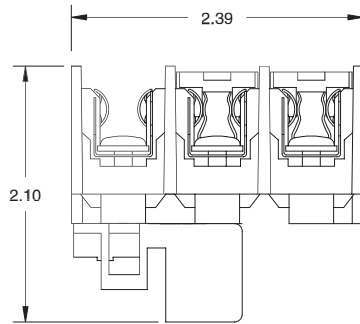
R01B



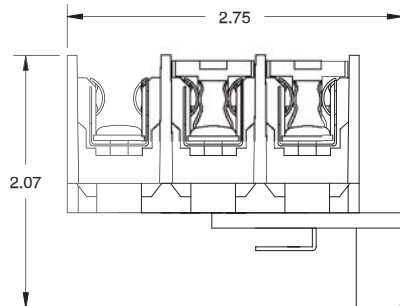
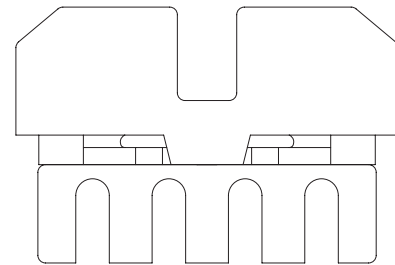
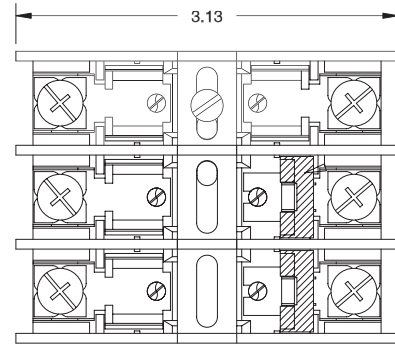
# Industrial Control Transformers

## Field Installed Fuse Options

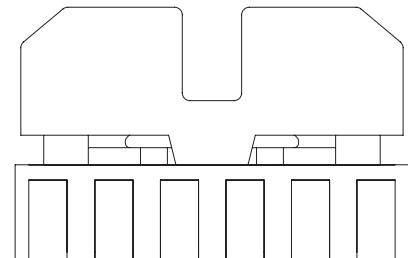
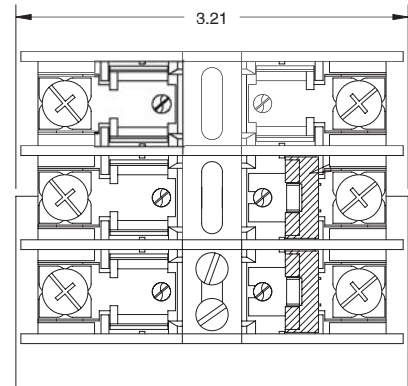
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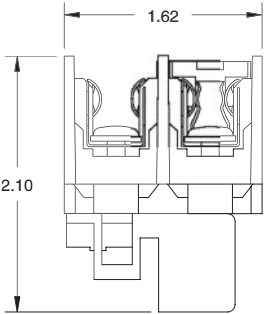
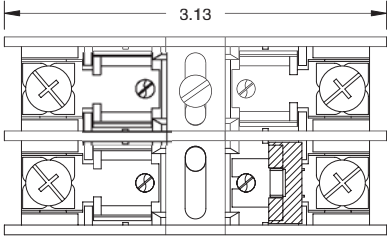
**FB3A**



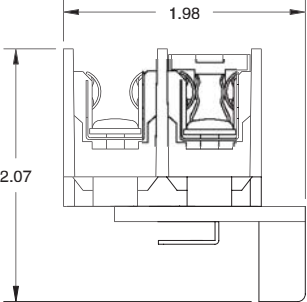
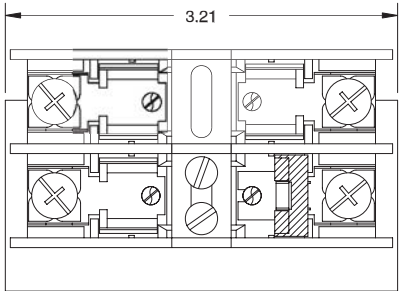
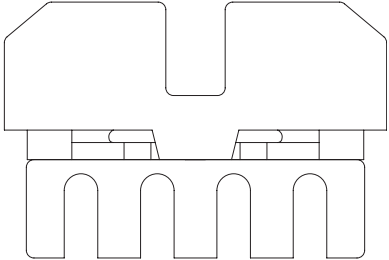
**FB3B**



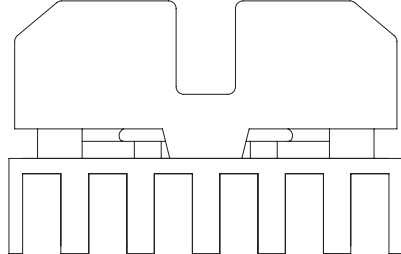
# Industrial Control Transformers Field Installed Fuse Options



**R11A**



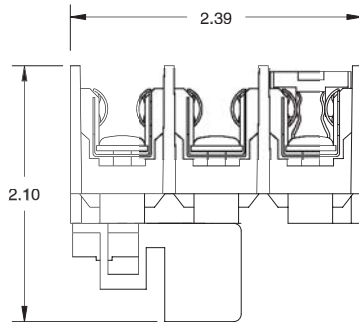
**R11B**



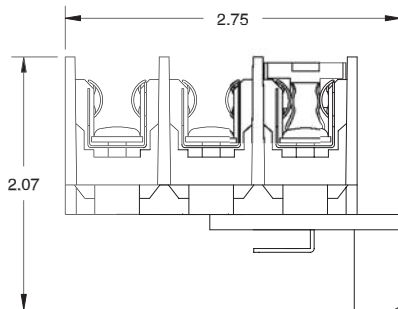
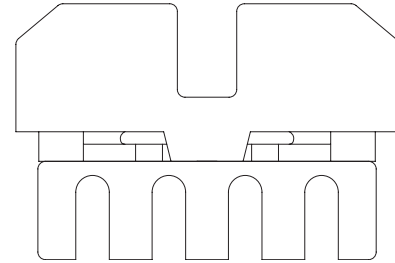
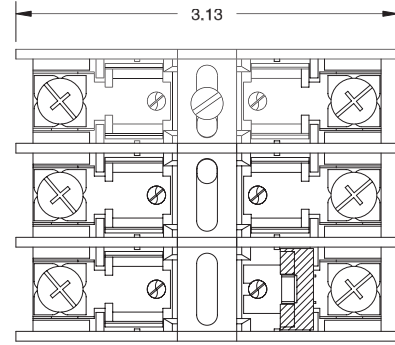
# Industrial Control Transformers

## Field Installed Fuse Options

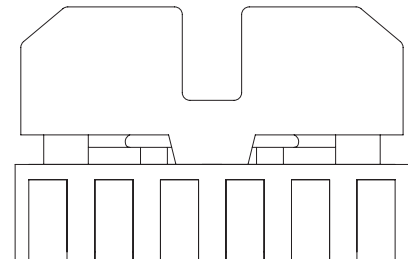
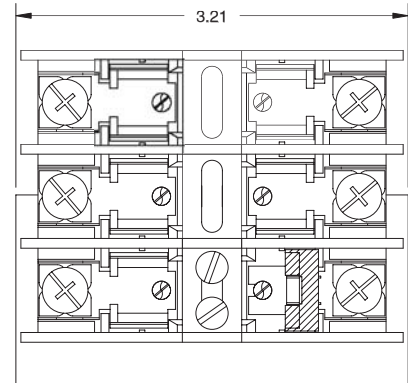
### Primary and Secondary Fusing



R12A



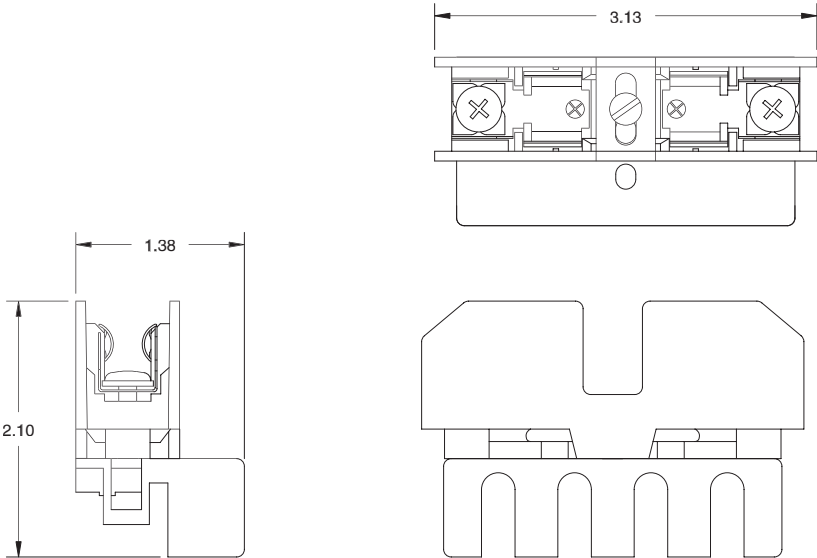
R12B



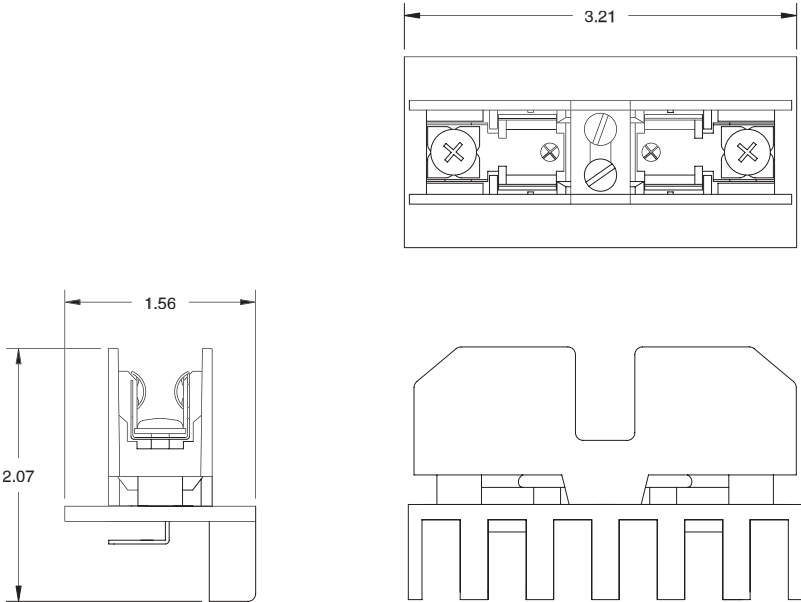


# Industrial Control Transformers Field Installed Fuse Options

## Secondary Fusing

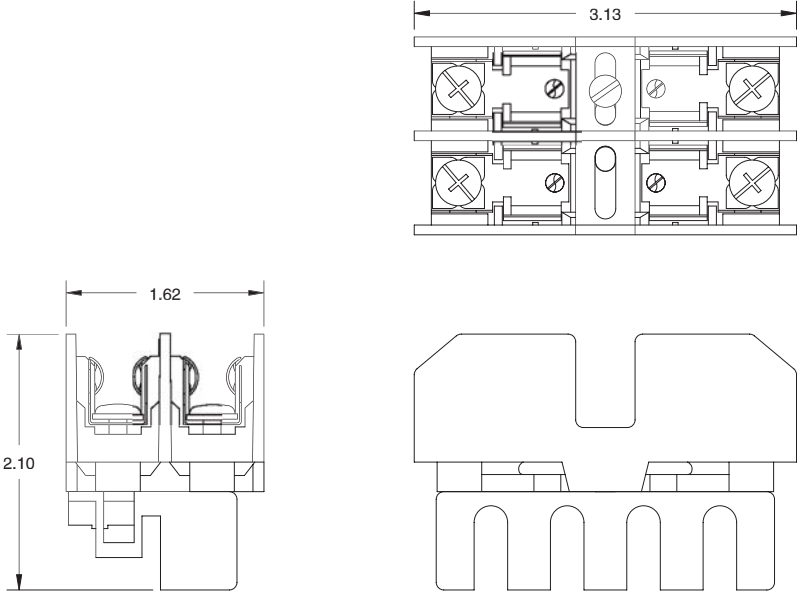


**FB1A**

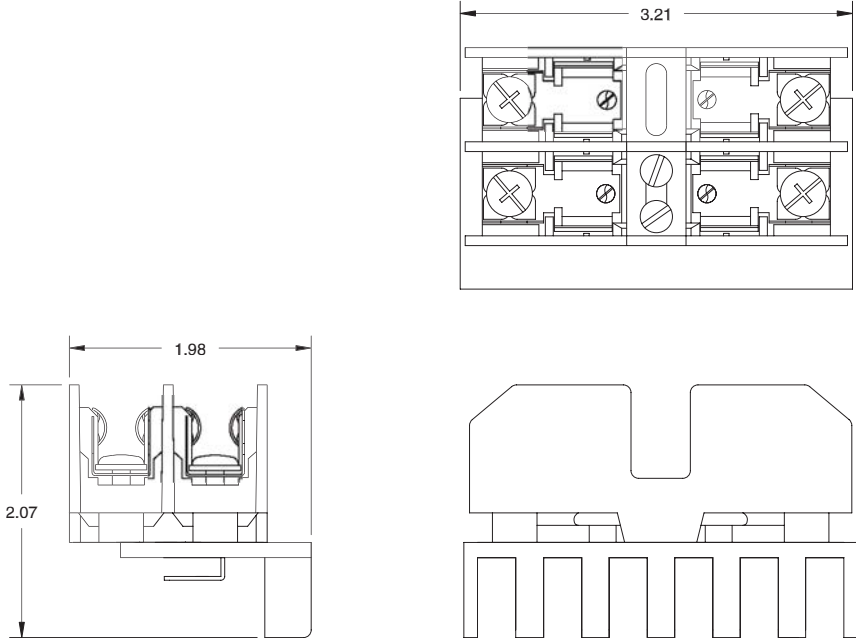


**FB1B**

**Industrial Control Transformers  
Field Installed Fuse Options**

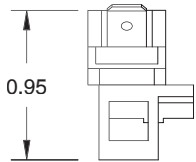
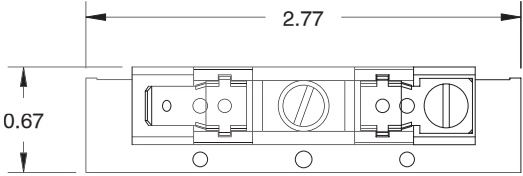


**S22A**

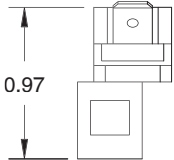
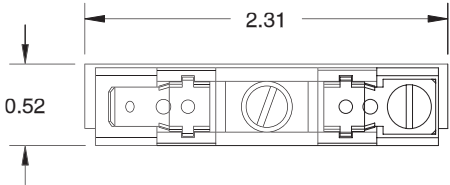
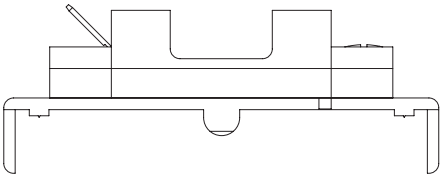


**S22B**

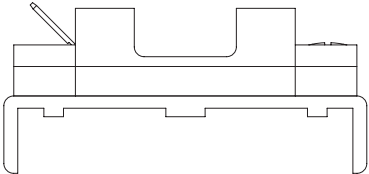
# Industrial Control Transformers Field Installed Fuse Options



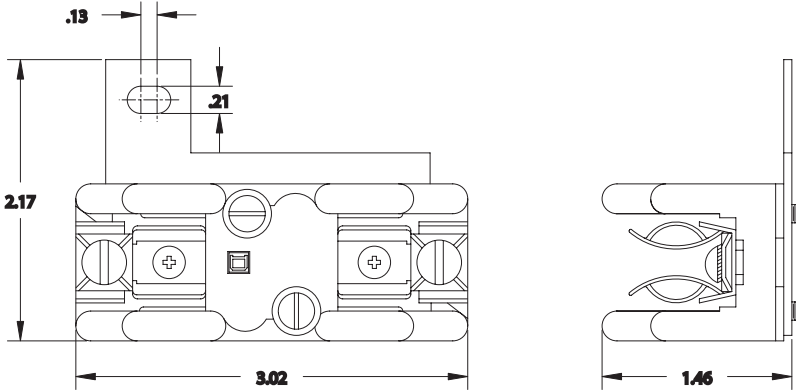
SF25A



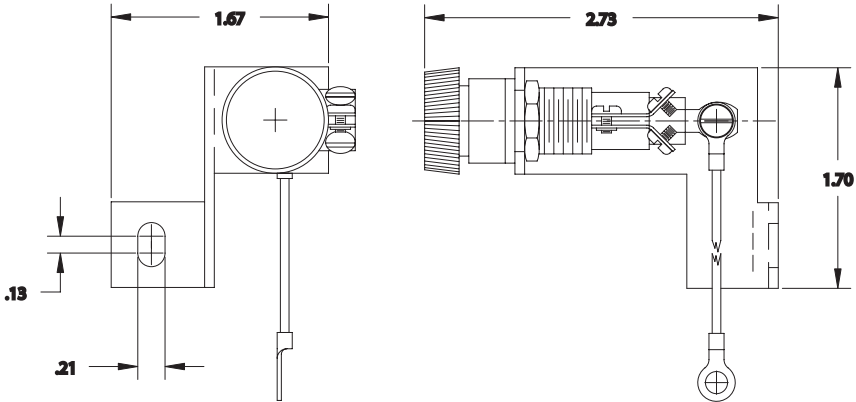
SF25B



**Industrial Control Transformers  
Field Installed Fuse Options**

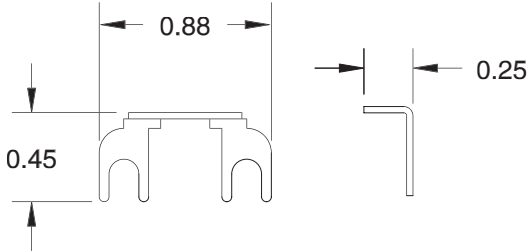


**AP1**



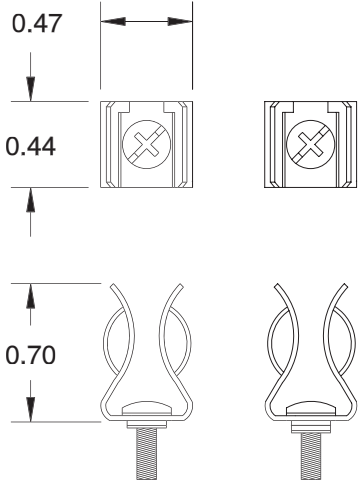
**AP2**

Secondary Fuse Clips

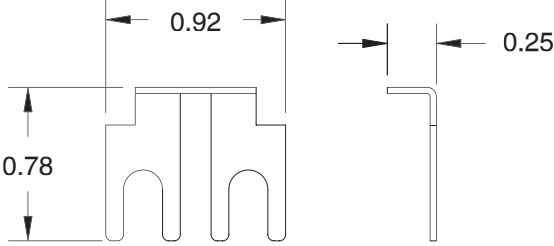


Jumper

SF41A

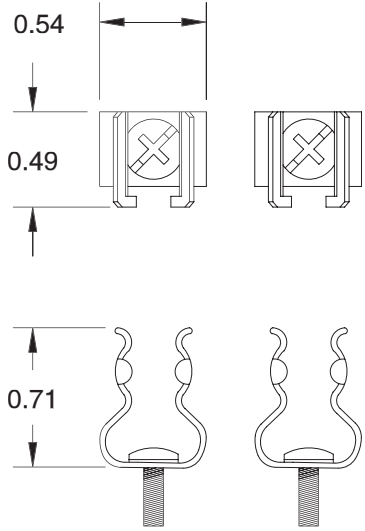


Fuse Clip



Jumper

SF41B

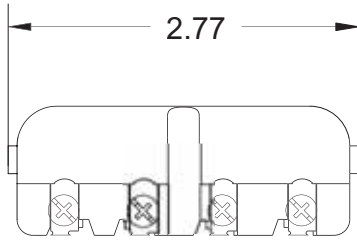


Fuse Clip

# Industrial Control Transformers

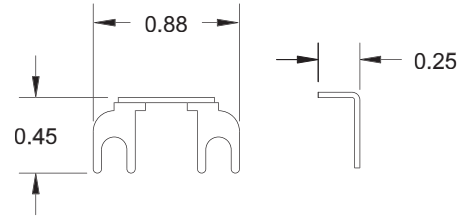
## Field Installed Fuse Options

### Terminal Blocks

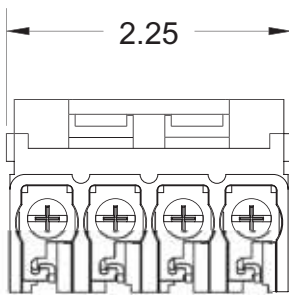


25–200 VA: Key I  
25–150 VA: Key II

Screw size: 6-32  
Ring lug: #6 stud with a  
0.375 in. max O.D.  
Torque: 6-9 in-lbs



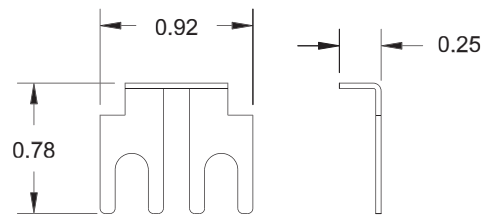
Jumper



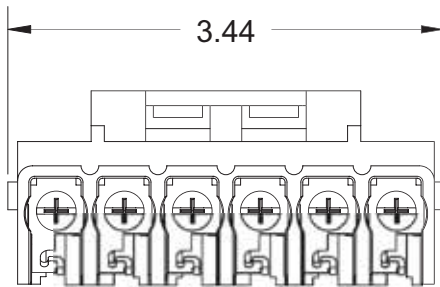
250–5000 VA: Key I  
200–5000 VA: Key II

All four pole: Key III and IV

Screw size: 8-32  
Ring lug: #8 stud with a  
0.438 in. max O.D.  
Torque: 13-16 in-lbs

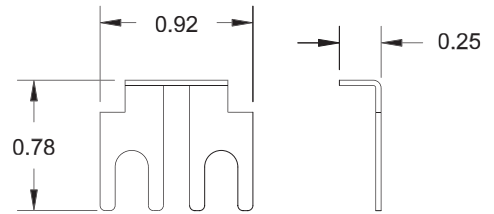


Jumper



All six pole: Key III and IV

Screw size: 8-32  
Ring lug: #8 stud with a  
0.438 in. max O.D.  
Torque: 13-16 in-lbs

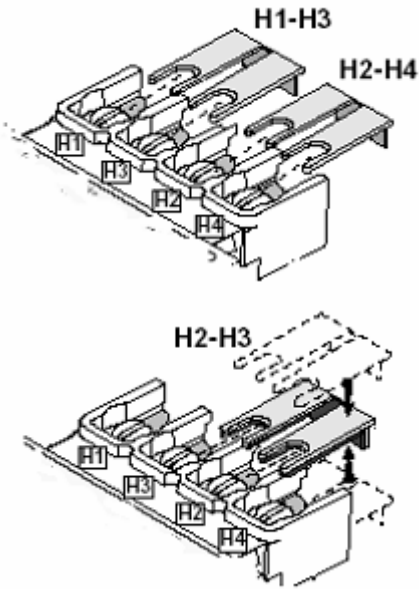


Jumper

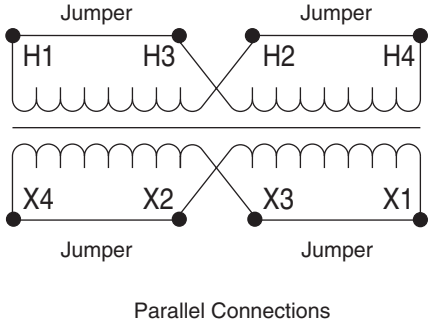
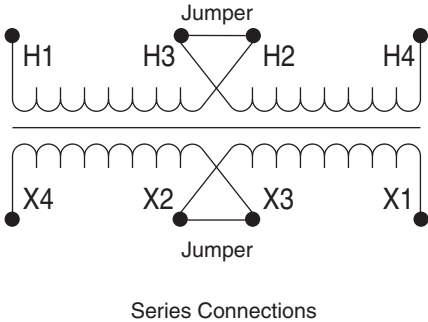
# Industrial Control Transformers Application

## APPLICATION

In preparation for connecting power to the primary side of dual voltage single-phase transformers, it's necessary to first wire the two windings in either series or parallel to match the incoming voltage. An example of this is common transformers with a primary voltage description of 240 x 480. The windings are rated for the lower of the two voltages shown on either side of the 'x'. Connecting the windings in series allows for the higher of the two voltages. Connecting the windings in parallel allows for the lower of the two voltages.



### Example of Series and Parallel Connections



*NOTE: This diagram is for illustration purposes only. Actual units will have different combinations. See diagrams for actual connections.*

# Industrial Control Transformers

## Application

### Example of a typical application

- OEM customer base source voltages in United States: 208, 240, or 480 volts (From past shipments 480 is 65% of the business, 208 is 20%, and 240 is 10%)
- 5% of business goes into Canada and needs 600 volts; customer always knows when equipment goes to Canada.
- Load requirement is for a 500VA transformer, load is 120 volt control

For this customer, Schneider Electric has the following solutions:

#### Solution 1

Three standard units with interchangeable dimensions

9070T500D1—240 x 480 to 120; handles 75% of business. For details, see the tables on page 8.

9070T500D3—208 to 120; handles 20% of business. For details, see the tables on page 9.

9070T500D5—600 to 120; handles 5% of business. For details, see the tables on page 9.

#### Solution 2

Two MultiTap units with interchangeable dimensions

9070T500D20—208/230/460 to 115; handles 95% of business {US Voltage Code}. For details, see the tables on page 10.

9070T500D32—230/460/575 to 95/115; handles 5% of business {North American Voltage Code}; covers 460 and 575 Canadian sources. For details, see the tables on page 11.

#### Solution 3

One Universal Control Transformer

9070T500D50—240/416/480/600 to 99/120/130. For details, see the tables on page 12.



## Technical Data

### 50/60 Hertz

Transformers that are dual rated for 50/60 Hz are truly global units and no derating is required for voltages or VA. (Type T are 50/60 Hz; Type EO are 60 Hz with de-rating for 50 Hz).

### Base Plates

The development of welded cores has allowed the incorporation of base plates on larger VA transformers. Base plates are usually welded to the core of the transformer for a solid connection to the transformer. They allow manufacturers to offer more standardized mounting for specific VA sizes by allowing multiple core stacks. Available for Type T transformers only.

### Touch-Safe Terminals

Being able to offer touch-safe terminals is increasing in importance. Currently all equipment that must comply with EN 60-204 (Machine and Low Voltage Directives) must have some type of barrier for live parts. Besides the CE standard listed above, domestic customers are requiring barriers on live parts with voltages above 460 V. These customers allow Plexiglas™ covers to be installed for these barriers.

Type T transformers can be made Fingersafe® by using snap-on covers that are removable with a screwdriver or other flat tool. Covers are sold separately.

### Formed Terminal Board

Formed terminal boards are used on multiple VA ranges and different voltage combinations. This allows the manufacturer to punch jumpers for customer interconnections and gives the customer the same basic layout for all units. The snap-on covers for touch-safe terminations also are available on units with formed terminal boards. Available for Type T transformers only.

### Varnish Vacuum Impregnation

This is a manufacturing process for the core and coil of industrial control transformers. The transformer is put into a tank of varnish, then the varnish is put into a vacuum, causing the varnish to be forced throughout the coil and core. After being vacuum impregnated, the units are cured in an oven to seal the varnish. The varnish is absorbed by any paper insulation system and coats other insulation with another layer of electrical strength. The process causes the coil to have a very tight connection because it is completely bonded and mechanically very strong. The cores are also tightly bonded with the varnish, causing the units to have better heat transfer and less vibration noise.

Schneider Electric uses this process on all control transformers, using a clear varnish with optimum electrical characteristics.

# Industrial Control Transformers

## Frequently Asked Questions

### FREQUENTLY ASKED QUESTIONS

Question	Answer						
Should you consolidate your control transformer to a MultiTap or Universal Control Transformer?	<p>When A Multitap Unit Might Be For You:</p> <ol style="list-style-type: none"> <li>1. Transformer will be installed in a device whose source voltage is unknown at time of shipment</li> <li>2. Space is not critical (MultiTaps are larger than standard units)</li> <li>3. You sell to markets with multiple source voltages</li> <li>4. Reduced number of parts will offset premium for MultiTap units</li> </ol> <p>When A MultiTap Unit Might Not Be Beneficial</p> <ol style="list-style-type: none"> <li>1. High percentage of your business is 240 x 480 source voltage</li> <li>2. Space is an issue</li> <li>3. Source voltage is always known at time of shipment</li> <li>4. Source voltage changes other components in the control circuit</li> <li>5. Premium for MultiTap does not get offset by having fewer parts</li> </ol>						
Can a 9070 type T or TF control transformer be used in a back (reverse) feed application as a step-up transformer?	No, they cannot. Industrial control transformers terminals are specifically marked "primary" and "secondary". As such, the National Electrical Code (NEC) and Underwriters Laboratories (UL) prohibit connecting the source to other than the primary terminals. Also, since industrial control transformers utilize compensated windings to accommodate the high regulation inherent in such small transformers, the resulting voltage ratio would be lower than desired. In other words, if a control transformer were reverse fed, the output voltage would be lower than desired.						
Does Schneider Electric provide fuses for the primary and the secondary of a 9070 Type TF industrial control transformer?	While the 9070 Type TF industrial control transformer comes with a three-pole fuse block (two rejection type Class CC fuses for the primary, and one non-rejection type midget fuse for the secondary), Schneider Electric does not provide the fuses. Proper fuse selection is the installer's responsibility and is dictated by NEC table 450-3(b) and any specific application parameters that exist with any industrial control transformer installation.						
My 9070 Type T or TF industrial control transformer has four terminals on both the primary and secondary, but only markings on the wiring diagram of H1 and H2 on the primary and X1 and X2 on the secondary. Which terminal do I use?	The nameplate of your Schneider Electric 9070 Type T or TF industrial control transformer clearly marks out that the outside terminals of each side are used for the customer installed wire connections. Schneider Electric makes a standard four- or six-terminal block for various transformer designs for commercial cost effectiveness. With only two terminals being used, it is standard practice for it to always be the outside terminals. Several different transformer voltage and wiring arrangements are shown in this catalog.						
How do the 9070-FB3A, 9070-FB2A, and 9070-FB-1A fuse blocks mount on a 9070 Type T control transformer when factory installed? When field installed?	When factory installed on a 9070 Type TF control transformer, they mount on the center of the core on factory installed studs. When field installed by the customer on a 9070 Type T control transformer, they mount over one of the terminal strips using hardware supplied with the fuse block kit. (There are no studs on the 9070 Type T, only on the Type TF.)						
Does Schneider Electric offer epoxy encapsulated versions of its 9070 Type T and TF control power transformers?	Schneider Electric does not offer epoxy encapsulated industrial control transformers. The 9070 Type T and TF industrial control transformer is the premier offering in the industry and is suitable for virtually any installation appropriate for a CPT.						
What is the sound level for a 9070 Type T control transformer?	Sound levels for general purpose and control transformers are per NEMA ST-20 sound levels. For Type T control transformers, this level is 40dB maximum.						
Are replacement jumper kits offered for Schneider Electric's 9070 Type T and TF industrial control transformers?	Yes. Replacement jumper kits contain two jumpers per kit and must be ordered in minimum quantities of 50 kits. Use kit number 30033-027-53 for Accessory Key I (25–200 VA) and Accessory Key II (25–150 VA). Use kit number 30033-027-54 for Accessory Key I (250–5000 VA), Accessory Key II (200–3000 VA), and Accessory Key III (25–3000 VA).						
Do 9070 industrial control transformers contain any materials, such as PCBs, lead, or other heavy metals, that would require special disposal means	Schneider Electric 9070 Type T and TF industrial control transformers do not contain any material that would require any special disposal means and can be disposed of in the normal manner. Since the majority of the transformer is built of recyclable material (steel, copper, etc.), Schneider Electric urges the customer to recycle the unit if possible.						
What does a "triple rating" mean in terms of an industrial control transformers voltage code?	<p>A triple rating on the control transformer's voltage code basically means that the transformer is designed to successfully operate at voltages slightly different than the nominal voltage at its full VA capacity. This is done to allow for different voltage systems that require the same voltage ratios, say 4:1 or 2:1.</p> <p>Example: The 9070T250D1 is a triple rated voltage code unit that can supply 250VA with the following input voltages and the corresponding output:</p> <table border="0"> <tr> <td>Input: 240 or 480</td> <td>Output: 120</td> </tr> <tr> <td>Input: 230 or 460</td> <td>Output: 115</td> </tr> <tr> <td>Input: 220 or 440</td> <td>Output: 110</td> </tr> </table>	Input: 240 or 480	Output: 120	Input: 230 or 460	Output: 115	Input: 220 or 440	Output: 110
Input: 240 or 480	Output: 120						
Input: 230 or 460	Output: 115						
Input: 220 or 440	Output: 110						
What is the maximum fuse ampere rating that can be used in a factory or field installed fuse block or fuse clip for a 9070 Type T control transformer?	The maximum ampere rating of the fuse blocks and fuse clips offered by Schneider Electric for the 9070 Type T control transformers is 30 amps. If higher fuse ratings are required, then the customer will have to provide the supplementary fuse holder provisions.						
On a 9070 Type T or TF industrial control transformer with more than one secondary voltage available, can more than one secondary voltage be utilized or only one?	<p>The capabilities of the various 9070 Type T and TF transformers vary widely. Some units can only have one voltage out with a given voltage in. Others can have more than one. Contact your Schneider Electric representative for assistance.</p> <p>If a satisfactory model is not available, Schneider Electric has the capability of building virtually any industrial control transformer a customer may need.</p>						

## Industrial Control Transformers Frequently Asked Questions

Question	Answer
What does the CE VA rating mean in selecting a 9070 Type T control transformer?	The CE mark is the official marking required by the European Community for all Electric and Electronic equipment that will be sold, or put into service for the first time, anywhere in the European community. CE VA is the rated capacity of the control transformer according to the CE standard. By bearing the CE marking, a transformer can be sold into any of the participating European countries without having to first clear with that country whether it will accept the UL rating.
An installer had been told by an electrical engineer to ground a 9070 Type T control transformer's frame to the enclosure with a star washer. If this is so important, why does Schneider Electric plate the base of the transformer?	The 9070s base is plated to keep it from rusting. Schneider Electric does not provide grounding provisions on transformer, as grounding is the responsibility of the installer per NEC requirements.
Does a Schneider Electric 9070 Type T or TF industrial control transformer have any continuous overload capacity? What about momentary overloads due to high inrush loads, such as may occur with a coil on a contactor?	Transformers are 100% rated devices. As such, they do not have any continuous overload capacity. They are specifically designed for momentary current draw in excess of their rating for high inrush type loads.
Does a 9070 Type T or TF transformer need to have its impedance listed on its nameplate to be used in any particular area in the world?	Industrial control transformers do not have to list their impedance on their nameplate. They can be used anywhere in the world where their UL, CSA, or CE listing allows, or where they are allowed by the local jurisdiction.
What is the difference between a 9070 Type T and Type EO control power transformer?	The 9070 Type T is the current design and has both factory and field installed accessories available (such as fuse blocks, fingersafe covers, fuse pullers, etc.). The Type EO is an established design with better regulation, but does not have any available accessories.
What is the difference between an old 9070 Type K transformer and a new 9070 Type T?	The CE rated, NOM approved Type T transformer replaces the Type K, which is no longer available. The Type T matches the Type K in function and form, but not necessarily in fit, i.e., the dimensions may vary.
Does Schneider Electric offer finger safe covers for use with 9070 Type T and TF transformer fuse blocks?	The fuse puller accessories (9070FP1) do offer some protection when used and the fuse is in place, however they do not qualify the block for any additional standards. While the fuse block is CE marked, the fuse puller kit does not comply with European standards for finger safe as it does not require a tool to remove it. However, this may not be critical as Schneider Electric does not recommend shipping our fuse block or 9070TF to Europe, as the fuses used there are different than those used in North America. Thus, the customer should supply their own fuse block suitable for the European fuses when the transformer is to be used in Europe.
Can a 9070 Type T control power transformer or a general purpose transformer be used to provide power for 24V lighting, 120V to 24V application?	The NEC requires the transformer feeding the low voltage lighting system to be a part of the UL listed lighting system as assembled by the Original Equipment Manufacturer (OEM). A contractor, distributor, or end user cannot assemble their own low voltage lighting system and comply with the NEC without going through UL. If the OEM has a particular transformer listed in their UL file, then that unit may be used. So if the Schneider Electric 9070 Type T device is part of a lighting system that is UL listed, the answer is yes.

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