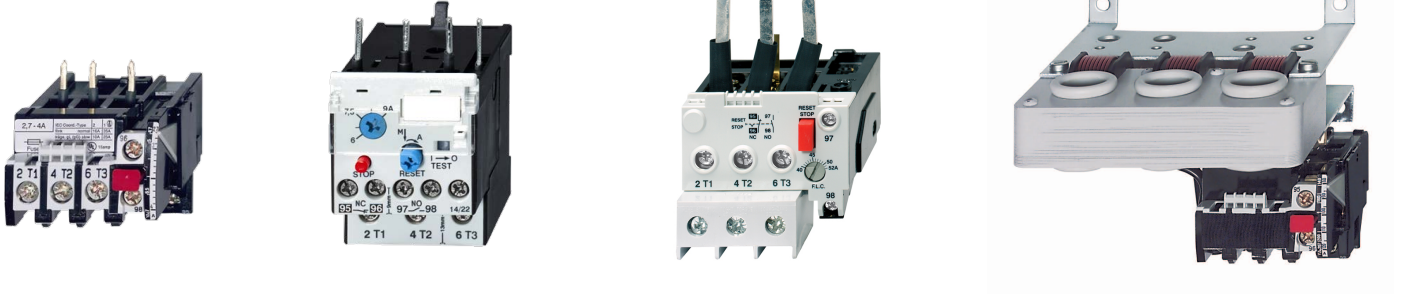


# Thermal Overload Relays

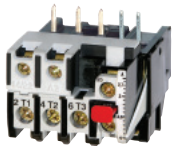


## For Use with Contactor Series K1..

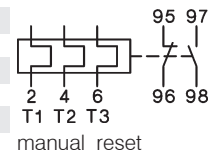
Thermal Overload Relays for plug-in mounting

Setting Range D.O.L. (A)  $\Delta$  (A) Type Pack pcs. Weight kg/pc. Wiring Diagram

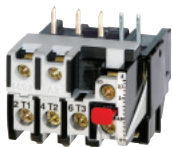
With Manual Reset, for contactors K1-..



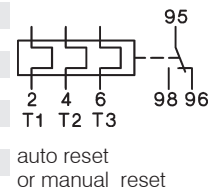
0,12	-	<b>0,18</b>	-	<b>U12/16E 0,18 K1</b>	1	
0,18	-	<b>0,27</b>	-	<b>U12/16E 0,27 K1</b>	1	0,10
0,27	-	<b>0,4</b>	-	<b>U12/16E 0,4 K1</b>	1	0,10
0,4	-	<b>0,6</b>	-	<b>U12/16E 0,6 K1</b>	1	0,10
0,6	-	<b>0,9</b>	-	<b>U12/16E 0,9 K1</b>	1	
0,8	-	<b>1,2</b>	-	<b>U12/16E 1,2 K1</b>	1	0,10
1,2	-	<b>1,8</b>	-	<b>U12/16E 1,8 K1</b>	1	0,10
1,8	-	<b>2,7</b>	-	<b>U12/16E 2,7 K1</b>	1	
2,7	-	<b>4</b>	-	<b>U12/16E 4 K1</b>	1	0,10
4	-	<b>6</b>	7 - 10,5	<b>U12/16E 6 K1</b>	1	
6	-	<b>9</b>	10,5 - 15,5	<b>U12/16E 9 K1</b>	1	0,10
8	-	<b>11</b>	14 - 19	<b>U12/16E 11 K1</b>	1	0,10
10	-	<b>14</b>	18 - 24	<b>U12/16E 14 K1</b>	1	0,10



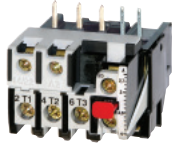
With Auto Reset, for contactors K1-..



0,12	-	<b>0,18</b>	-	<b>U12/16A 0,18 K1</b>	1	0,10
0,18	-	<b>0,27</b>	-	<b>U12/16A 0,27 K1</b>	1	0,10
0,27	-	<b>0,4</b>	-	<b>U12/16A 0,4 K1</b>	1	0,10
0,4	-	<b>0,6</b>	-	<b>U12/16A 0,6 K1</b>	1	
0,6	-	<b>0,9</b>	-	<b>U12/16A 0,9 K1</b>	1	0,10
0,8	-	<b>1,2</b>	-	<b>U12/16A 1,2 K1</b>	1	0,10
1,2	-	<b>1,8</b>	-	<b>U12/16A 1,8 K1</b>	1	0,10
1,8	-	<b>2,7</b>	-	<b>U12/16A 2,7 K1</b>	1	0,10
2,7	-	<b>4</b>	-	<b>U12/16A 4 K1</b>	1	0,10
4	-	<b>6</b>	7 - 10,5	<b>U12/16A 6 K1</b>	1	0,10
6	-	<b>9</b>	10,5 - 15,5	<b>U12/16A 9 K1</b>	1	
8	-	<b>11</b>	14 - 19	<b>U12/16A 11 K1</b>	1	0,10
10	-	<b>14</b>	18 - 24	<b>U12/16A 14 K1</b>	1	0,10

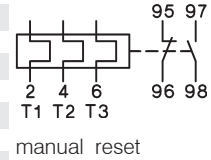


# Thermal Overload Relays



With **Quick Tripping Characteristic** for EEx e motors and submersible pumps, f. contactors K1-..

0,4 - <b>0,6</b>	-		<b>U12/16EQ 0,6 K1</b>	1	0,10
0,6 - <b>0,9</b>	-		<b>U12/16EQ 0,9 K1</b>	1	0,10
0,8 - <b>1,2</b>	-		<b>U12/16EQ 1,2 K1</b>	1	0,10
1,2 - <b>1,8</b>	-		<b>U12/16EQ 1,8 K1</b>	1	
1,8 - <b>2,7</b>	-		<b>U12/16EQ 2,7 K1</b>	1	0,10
2,7 - <b>4</b>	-		<b>U12/16EQ 4 K1</b>	1	0,10
4 - <b>6</b>	7 - 10,5		<b>U12/16EQ 6 K1</b>	1	0,1
6 - <b>9</b>	10,5 - 15,5		<b>U12/16EQ 9 K1</b>	1	0,10
8 - <b>11</b>	14 - 19		<b>U12/16EQ 11 K1</b>	1	0,10

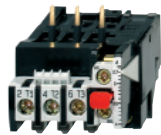


## For Use with Contactor Series K3..

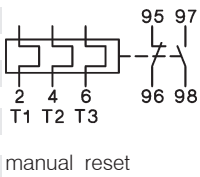
Thermal Overload Relays for plug-in mounting

Setting Range		Type	Pack pcs.	Weight kg/pc.	Wiring Diagram
D.O.L. (A)	$\Delta$ (A)				

With **Manual Reset**, for contactors K(G)3-10.. to K(G)3-22... ..



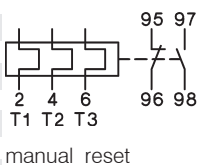
0,12 - <b>0,18</b>	-		<b>U12/16E 0,18 K3</b>	1	0,10
0,18 - <b>0,27</b>	-		<b>U12/16E 0,27 K3</b>	1	0,10
0,27 - <b>0,4</b>	-		<b>U12/16E 0,4 K3</b>	1	0,10
0,4 - <b>0,6</b>	-		<b>U12/16E 0,6 K3</b>	1	
0,6 - <b>0,9</b>	-		<b>U12/16E 0,9 K3</b>	1	
0,8 - <b>1,2</b>	-		<b>U12/16E 1,2 K3</b>	1	0,10
1,2 - <b>1,8</b>	-		<b>U12/16E 1,8 K3</b>	1	0,10
1,8 - <b>2,7</b>	-		<b>U12/16E 2,7 K3</b>	1	0,10
2,7 - <b>4</b>	-		<b>U12/16E 4 K3</b>	1	
4 - <b>6</b>	7 - 10,5		<b>U12/16E 6 K3</b>	1	
6 - <b>9</b>	10,5 - 15,5		<b>U12/16E 9 K3</b>	1	0,10
8 - <b>11</b>	14 - 19		<b>U12/16E 11 K3</b>	1	0,10
10 - <b>14</b>	18 - 24		<b>U12/16E 14 K3</b>	1	0,10
13 - <b>18</b>	23 - 31		<b>U12/16E 18 K3</b>	1	0,10
17 - <b>23</b>	30 - 40		<b>U12/16E 23 K3</b>	1	0,10
22 - <b>30</b>	38 - 52		<b>U12/16E 30 K3</b>	1	0,13



With **quick Tripping Characteristic** for EEx e motors and under water pumps

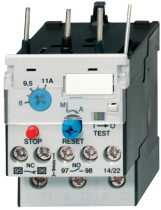


0,4 - <b>0,6</b>	-		<b>U12/16EQ 0,6 K3</b>	1	
0,6 - <b>0,9</b>	-		<b>U12/16EQ 0,9 K3</b>	1	
0,8 - <b>1,2</b>	-		<b>U12/16EQ 1,2 K3</b>	1	0,10
1,2 - <b>1,8</b>	-		<b>U12/16EQ 1,8 K3</b>	1	
1,8 - <b>2,7</b>	-		<b>U12/16EQ 2,7 K3</b>	1	0,10
2,7 - <b>4</b>	-		<b>U12/16EQ 4 K3</b>	1	0,10
4 - <b>6</b>	7 - 10,5		<b>U12/16EQ 6 K3</b>	1	0,10
6 - <b>9</b>	10,5 - 15,5		<b>U12/16EQ 9 K3</b>	1	0,10
8 - <b>11</b>	14 - 19		<b>U12/16EQ 11 K3</b>	1	0,10
10 - <b>14</b>	18 - 24		<b>U12/16EQ 14 K3</b>	1	

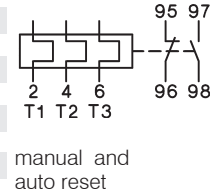


# Thermal Overload Relays

For contactors K(G)3-10.. to K(G)3-40A..



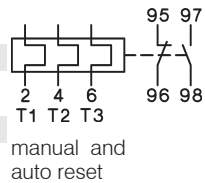
0,12 - <b>0,18</b>	-	<b>U3/32 0,18</b>	1	0,1
0,18 - <b>0,27</b>	-	<b>U3/32 0,27</b>	1	
0,27 - <b>0,4</b>	-	<b>U3/32 0,4</b>	1	
0,4 - <b>0,6</b>	-	<b>U3/32 0,6</b>	1	0,14
0,6 - <b>0,9</b>	-	<b>U3/32 0,9</b>	1	0,14
0,8 - <b>1,2</b>	-	<b>U3/32 1,2</b>	1	0,14
1,2 - <b>1,8</b>	-	<b>U3/32 1,8</b>	1	
1,8 - <b>2,7</b>	-	<b>U3/32 2,7</b>	1	0,14
2,7 - <b>4</b>	-	<b>U3/32 4</b>	1	
4 - <b>6</b>	7 - 10,5	<b>U3/32 6</b>	1	0,14
6 - <b>9</b>	10,5 - 15,5	<b>U3/32 9</b>	1	
8 - <b>11</b>	14 - 19	<b>U3/32 11</b>	1	0,14
10 - <b>14</b>	18 - 24	<b>U3/32 14</b>	1	
13 - <b>18</b>	23 - 31	<b>U3/32 18</b>	1	0,14
17 - <b>24</b>	30 - 41	<b>U3/32 24</b>	1	0,14
23 - <b>32</b>	40 - 55	<b>U3/32 32</b>	1	0,14



For contactors K(G)3-24A.. to K(G)3-40A ..



10 - <b>14</b>	18 - 24	<b>U3/42 14</b>	1	0,30
14 - <b>20</b>	24 - 35	<b>U3/42 20</b>	1	0,30
20 - <b>28</b>	35 - 48	<b>U3/42 28</b>	1	
28 - <b>42</b>	48 - 73	<b>U3/42 42</b>	1	0,30

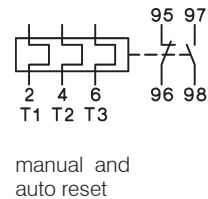


Setting Range	Type	Pack pcs.	Weight kg/pc.	Wiring Diagram
D.O.L. (A) $\Upsilon\Delta$ (A)				

For contactors K3-50A.. to K3-74A..



20 - <b>28</b>	35 - 48	<b>U3/74 28</b>	1	0,40
28 - <b>42</b>	48 - 73	<b>U3/74 42</b>	1	
40 - <b>52</b>	70 - 90	<b>U3/74 52</b>	1	
52 - <b>65</b>	90 - 112	<b>U3/74 65</b>	1	
60 - <b>74</b>	104 - 128	<b>U3/74 74</b>	1	0,40

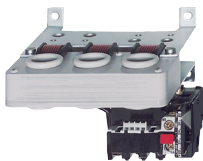


## For Use with Contactor Series K3..

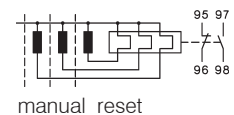
Thermal Overload Relays for separate mounting

Setting Range	Type	Pack pcs.	Weight kg/pc.	Wiring Diagram
D.O.L. (A) $\Upsilon\Delta$ (A)				

For contactors K3-90, K3-115, K85, K110



60 - <b>90</b>	104 - 156	<b>U85 90</b>	1	0,90
80 - <b>120</b>	140 - 207	<b>U85 120</b>		

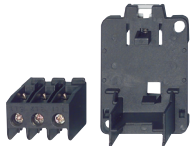


# Thermal Overload Relays

## Accessories



	for overload relays	for contactors	Type	Pack set	Weight kg/set
<b>Busbar Sets</b>					
U800		K3-450.., K3-550..	<b>SU840/550</b>	1	1,7
U800		K3-700.., K3-860..	<b>SU840/860</b>	1	2,1



	Cable Cross-section (mm <sup>2</sup> )		Type	Pack pcs.	Weight kg/pc.
overload relay			solid or stranded flexible		
<b>for Single Mounting U12/16..K3</b> Base for DIN-rail mounting plus terminals					
U12/16..K3	0,75 - 6	0,75 - 4	<b>U12SM K3</b>	1	0,035



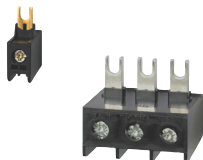
<b>for Single Mounting U3/32</b> Additional Terminals with fingertouch protection (U3/32 relays have base for DIN rail mounting integrated)					
U3/32	0,75 - 6	0,75 - 4	<b>U3/32SM</b>	1	0,035



<b>for Single Mounting U3/42 or U3/74</b> Base for DIN-rail mounting					
U3/42, U3/74	-	-	<b>U3/42G</b>	1	0,030



<b>for Single Mounting U3/42 or U3/74</b> Connecting Wire Set (3 pcs.)					
U3/42, U3/74	150mm length	10mm <sup>2</sup>	<b>LG5830-4</b>	1	0,060
U3/42, U3/74	250mm length	10mm <sup>2</sup>	<b>LG5830-2</b>	1	0,100



<b>Additional Terminals</b> with fingertouch protection					
1-pole f. U12/16, U3/32	0,75 - 10	0,75 - 6	<b>LG9339</b>	1	0,009
3-pole for U3/42	4 - 35	6 - 25	<b>LG7559</b>	1	0,052

## Thermal Overload Relays, tripping times for selection to motors of protection degree EEx e

### Relays With Standard Tripping Characteristic

**Setting Range** Tripping time depending on the multiple of the current setting from cold condition (tolerance  $\pm 20\%$  of the tripping time)

A	A	$I_A/I_N$ 3	$I_A/I_N$ 4	$I_A/I_N$ 5	$I_A/I_N$ 6	$I_A/I_N$ 7,2	$I_A/I_N$ 8
<b>U3/32 ..</b>							
0,12 -	<b>0,18</b>	16,1	9,6	6,8	5,3	4,2	3,7
0,18 -	<b>0,27</b>	16,6	9,7	6,7	5,2	4,1	3,6
0,27 -	<b>0,4</b>	19,4	11,4	7,9	6,1	4,7	4,2
0,4 -	<b>0,6</b>	18,7	10,9	7,6	5,9	4,6	4,0
0,6 -	<b>0,9</b>	19,2	11,2	7,7	5,9	4,6	4,1
0,8 -	<b>1,2</b>	20,8	12,3	8,5	6,6	5,2	4,6
1,2 -	<b>1,8</b>	25,5	14,1	9,8	7,6	5,9	5,2
1,8 -	<b>2,7</b>	26,6	15,6	10,9	8,3	6,5	5,7
2,7 -	<b>4</b>	22,7	13,6	9,5	7,4	5,8	5,1
4 -	<b>6</b>	22,2	13,3	9,3	7,1	5,6	4,9
6 -	<b>9</b>	20,4	11,9	8,2	6,1	4,7	4,0
8 -	<b>11</b>	20,9	11,8	7,9	5,7	4,3	3,5
10 -	<b>14</b>	21,3	11,7	7,4	5,1	3,7	3,0
13 -	<b>18</b>	21,2	12,1	8,0	6,2	4,6	4,1
17 -	<b>24</b>	20,4	12,0	8,6	6,3	4,5	3,7
23 -	<b>32</b>	20,2	10,2	6,7	4,7	3,4	2,8
<b>U3/42</b>							
10 -	<b>14</b>	21,8	11,4	7,0	5,0	3,7	2,8
14 -	<b>20</b>	22,4	11,2	6,7	4,5	3,2	2,4
20 -	<b>28</b>	21,8	10,8	6,5	4,5	3,3	2,5
28 -	<b>42</b>	25,2	13,3	8,0	5,5	4,0	3,1
<b>U3/74</b>							
20 -	<b>28</b>	21,8	10,8	6,5	4,5	3,3	2,5
28 -	<b>42</b>	25,2	13,3	8,0	5,5	4,0	3,1
40 -	<b>52</b>	18,3	9,2	5,6	3,9	2,8	2,2
52 -	<b>65</b>	17,8	8,7	5,2	3,4	2,5	1,9
<b>U85 ..</b>							
60 -	<b>90</b>	19,5	13,5	11,0	10,0	9,5	8,5
80 -	<b>120</b>	18,0	11,0	10,0	9,0	8,5	8,0
<b>U840 ..</b>							
260 -	<b>360</b>	23,3	14,1	10,0	7,6	6,1	5,4
340 -	<b>480</b>	23,0	13,8	9,6	7,6	6,1	5,4
440 -	<b>620</b>	20,5	12,4	9,0	7,0	5,5	5,0
560 -	<b>800</b>	21,0	12,5	9,0	7,0	5,6	5,2
<b>U12/16E(A) ..</b>							
0,12 -	<b>0,18</b>	18,5	10,4	7,2	5,5	4,3	3,6
0,18 -	<b>0,27</b>	16,7	9,8	6,5	5,0	4,1	3,5
0,27 -	<b>0,4</b>	19,4	12,1	8,2	5,9	4,9	4,2
0,4 -	<b>0,6</b>	18,7	11,2	8,0	6,0	4,9	4,1
0,6 -	<b>0,9</b>	19,7	11,6	8,1	6,1	4,9	4,2
0,8 -	<b>1,2</b>	22,9	13,6	10,0	7,3	6,0	5,2
1,2 -	<b>1,8</b>	22,2	13,2	9,2	7,6	5,8	5,3
1,8 -	<b>2,7</b>	23,0	13,7	9,3	7,6	5,7	5,1
2,7 -	<b>4</b>	24,0	14,4	9,9	7,8	5,9	5,1
4 -	<b>6</b>	24,7	13,8	9,9	7,3	5,6	4,8
6 -	<b>9</b>	22,0	13,4	8	5,7	4,1	3,5
8 -	<b>11</b>	17,4	9,2	5,9	4,1	2,9	2,3
10 -	<b>14</b>	26,4	12,9	7,6	5,2	3,5	2,8
13 -	<b>18</b>	14,7	7,7	4,8	3,2	2,3	1,7
17 -	<b>23</b>	16,2	8,4	5,0	3,6	2,4	1,8
22 -	<b>30</b>	16,8	8,5	5,0	3,6	2,3	1,9

### Relays With Quick Tripping Characteristic

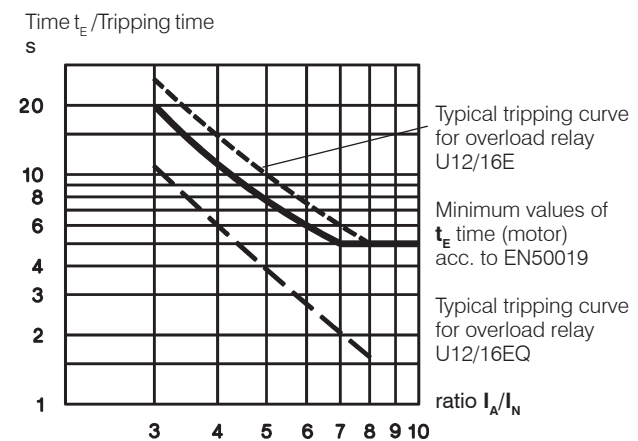
preferably for motors with short  $t_E$  time and for submersible pumps

**Setting Range** Tripping time depending on the multiple of the current setting from cold condition (tolerance  $\pm 20\%$  of the tripping time)

A	A	$I_A/I_N$ 3	$I_A/I_N$ 4	$I_A/I_N$ 5	$I_A/I_N$ 6	$I_A/I_N$ 7,2	$I_A/I_N$ 8
<b>U12/16EQ ..</b>							
0,4 -	<b>0,6</b>	13,6	8,4	5,9	4,2	3,3	3,0
0,6 -	<b>0,9</b>	13,8	7,8	5,2	4,1	3,2	2,7
0,8 -	<b>1,2</b>	13,1	7,5	5,2	3,9	3,1	2,7
1,2 -	<b>1,8</b>	14,6	8,7	6,0	4,6	3,6	3,2
1,8 -	<b>2,7</b>	13,5	7,6	5,3	3,9	3,1	2,7
2,7 -	<b>4</b>	11,0	6,0	4,1	2,6	1,7	1,4
4 -	<b>6</b>	9,6	5,3	3,3	2,3	1,6	1,3
6 -	<b>9</b>	10,2	5,4	3,4	2,3	1,6	1,3
8 -	<b>11</b>	12,0	6,2	3,9	2,5	1,8	1,3
10 -	<b>14</b>	12,8	6,6	4,0	2,6	1,8	1,4

All tripping times of overload relays U12/16EQ are shorter than the minimum values of the  $t_E$  time for motors of protection degree EEx e acc. to EN 50019 and therefore are suitable for all motors of protection degree EEx e. For these overload relays the selection on basis of tripping curves is thereby not necessary.

When selecting a standard overload, refer to the tripping curve. Determine the values of the starting current ratio  $I_A/I_N$  and the time  $t_E$  which is marked on the label of the motor. The overload must trip within the  $t_E$  time, which means that the tripping curve from cold condition must be (20% due to tolerance) below the co-ordination point  $I_A/I_N$  and the time  $t_E$ .  
 $I_A$  = Starting current of motor       $I_N$  = Rated current of motor  
 $t_E$  =  $t_E$ -time of motor



#### Example of selection for thermal overload relay:

Technical data of a motor protection EEx e  
 $P_N = 1,5kW$     $I_N = 3,6A$     $I_A/I_N = 5$     $t_E$  time = 8s

1) U12/16E 4 (2,7 - 4A)  
 Tripping time at  $5 \times I_N = 9,9s$   
 $9,9s + 20\% \text{ tolerance} = 11,9s > t_{E \text{ Motor}} = 8s$   
 The device U12/16E 4 is **not suitable**.

2) U12/16EQ 4 (2,7 - 4A)  
 Tripping time at  $5 \times I_N = 4,1s$   
 $4,1s + 20\% \text{ tolerance} = 4,9s < t_{E \text{ Motor}} = 8s$   
**The device U12/16EQ 4 is therefore suitable for motor protection**

# DATA SHEET

## Thermal Overload Relays Fuses for U3/32, U3/42, U3/74, U12/16E, U85, U180, U320 and U800

Type	Setting Range		Max. Fuse Size According to Coordination-type				Fuse UL	SCCR
	DOL	$\Delta$	"2" <sup>1)</sup>		"1" <sup>1)</sup>		A	kA
			quick A	slow, gL(gG) A	slow, gL(gG) A	aM A		
U3/32 (U12/16E)	0,12 - <b>0,18</b>	-	0,5 <sup>2)</sup>	0,5 <sup>2)</sup>	25	-	15	5
	0,18 - <b>0,27</b>	-	1,0 <sup>2)</sup>	1,0 <sup>2)</sup>	25	-	15	5
	0,27 - <b>0,4</b>	-	2	2	25	-	15	5
	0,4 - <b>0,6</b>	-	2	2	25	-	15	5
	0,6 - <b>0,9</b>	-	4	4	25	-	15	5
	0,8 - <b>1,2</b>	-	4	4	25	2	15	5
	1,2 - <b>1,8</b>	-	6	6	25	2	15	5
	1,8 - <b>2,7</b>	-	10	10	25	4	15	5
	2,7 - <b>4</b>	-	16	10	25	4	15	5
	4 - <b>6</b>	7 - 10,5	20	16	25	6	15	5
	6 - <b>9</b>	10,5 - 15,5	35	25	35	10	25	5
	8 - <b>11</b>	14 - 19	35	25	35	16	30	5
	10 - <b>14</b>	18 - 24	50	35	63	16	40	5
13 - <b>18</b>	23 - 31	50	35	63	20	50	5	
17 - <b>(23)24</b>	30 - (40)41	63	50	63	25	60	5	
(22)23 - <b>(30)32</b>	(38)40 - (52)55	80	63	80	35	70	5	
U3/42	10 - <b>14</b>	18 - 24	50	35	80	16	40	5
	14 - <b>20</b>	24 - 35	63	50	80	25	60	5
	20 - <b>28</b>	35 - 48	80	63	80	35	80	5
	28 - <b>42</b>	48 - 73	100	80	150	50	110	5
U3/74	20 - <b>28</b>	35 - 48	100	80	150	35	80	5
	28 - <b>42</b>	48 - 73	125	100	150	50	110	5
	40 - <b>52</b>	70 - 90	160	100	150	63	200	5
	52 - <b>65</b>	90 - 112	160	125	150	80	250	10
	60 - <b>74</b>	104 - 128	160	125	150	80	250	10
U85	60 - <b>90</b>	104 - 156					300	10
	80 - <b>120</b>	140 - 207					-	10
U180, U320 U800	all ranges all ranges						-	-

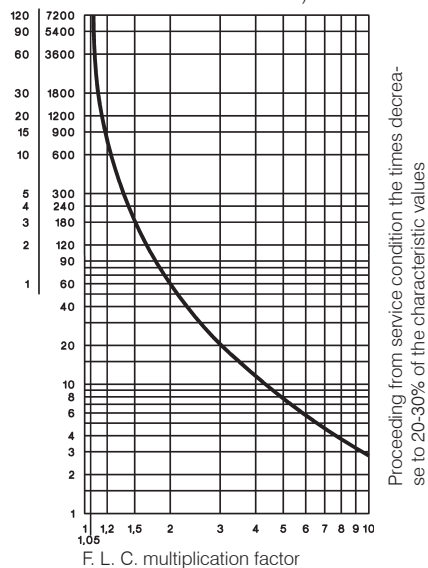
For short circuit protecting overload relays with current transformer use fuse according to the contactor of the combination.

### Tripping Characteristics for U3/32, U3/42, U3/74 and U12/16E

Detailed tripping times for each range see table page 124

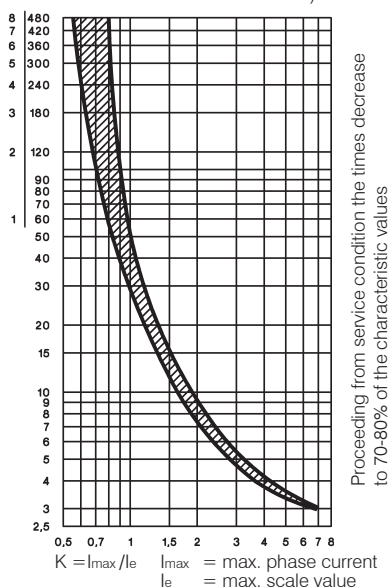
#### with three-phase load

Tripping time min. s (Average value of typical tolerance curves from cold condition)



#### with two-pole load

Tripping time min. s (Typical tolerance curve from cold condition)



1) Coordination-type according to IEC 947-4-1:  
 "2": Light contact welding accepted. Thermal overload relay must not be damaged.  
 "1": Welding of contactor and damage of the thermal overload relay allowed.  
 2) Miniature fuse

3) Suitable for use on a capability of delivering not more than

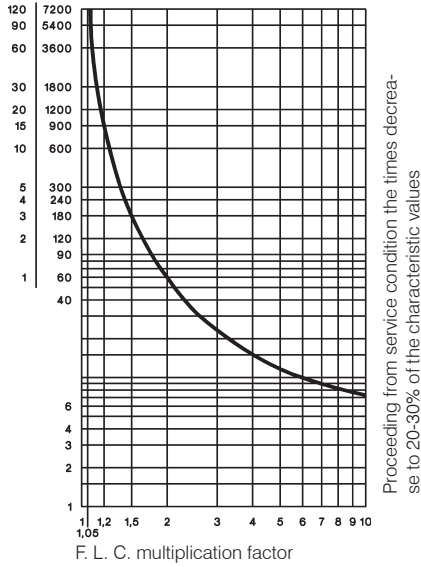
## Thermal Overload Relays

### Tripping Characteristics for U85, U180, U320, and U800

Detailed tripping times for each range of U85 see table page 124

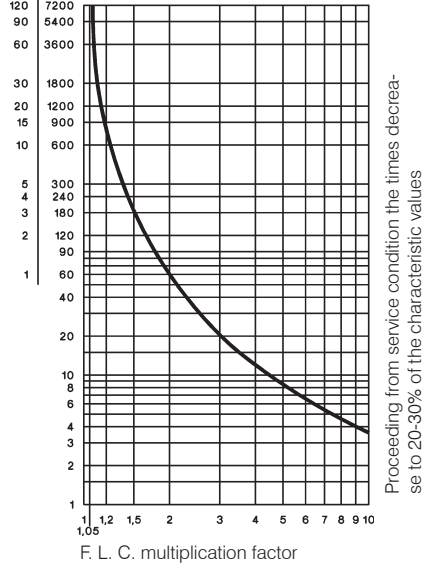
#### U85 with three-phase load

Tripping time (Average value of typical tolerance curves from cold condition)



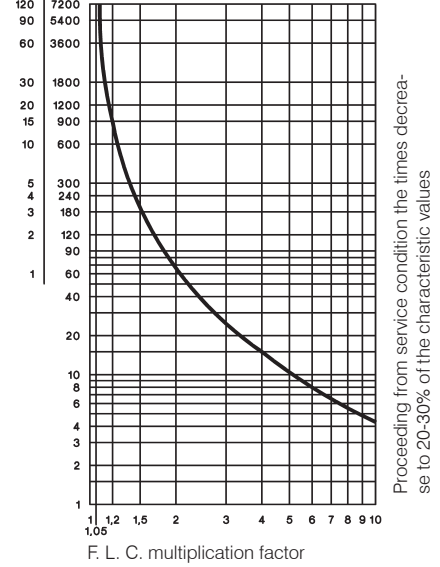
#### U180, U320 with three-phase load

Tripping time (Average value of typical tolerance curves from cold condition)



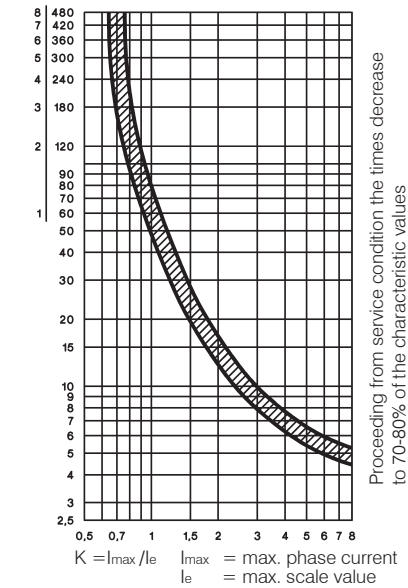
#### U800 with three-phase load

Tripping time (Average value of typical tolerance curves from cold condition)



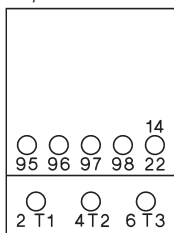
#### U85 with two-pole load

Tripping time (Typical tolerance curve from cold condition)

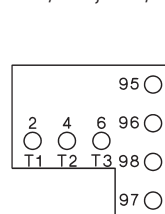


### Position of Terminals

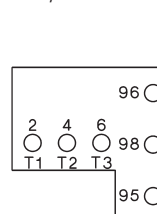
#### U3/32



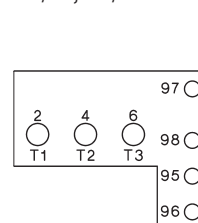
#### U12/16E, U12/16EM, U12/16EQ



#### U12/16A



#### U3/42, U3/74



## Thermal Overload Relays in Special Version

### Fuse for U12/16EQ

Setting Range	Maximum Fuse Acc. to Coordination-type "2" <sup>1)</sup>		
	quick A	slow, gL(gG) A	slow, gL(gG) A
0,4 - <b>0,6</b>	2	2	25
0,6 - <b>0,9</b>	4	4	25
0,8 - <b>1,2</b>	4	4	25
1,2 - <b>1,8</b>	6	6	25
1,8 - <b>2,7</b>	10	10	25
2,7 - <b>4</b>	16	10	25
4 - <b>6</b>	20	16	25
6 - <b>9</b>	35	25	35
8 - <b>11</b>	35	25	35
10 - <b>14</b>	50	35	63

### Fuse for U12/16EM

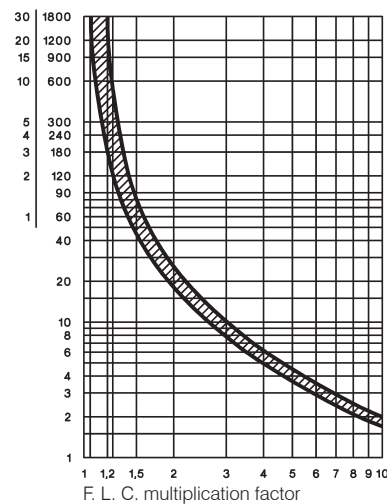
Setting Range	Maximum Fuse Acc. to Coordination-type "2" <sup>1)</sup>		
	380-400V slow, gL(gG) A	500V slow, gL(gG) A	660-690V slow, gL(gG) A
0,12 - <b>0,18</b>	none	none	on request
0,18 - <b>0,27</b>	none	none	on request
0,27 - <b>0,4</b>	none	none	on request
0,4 - <b>0,6</b>	none	none	on request
0,6 - <b>0,9</b>	none	none	on request
0,8 - <b>1,2</b>	none	10	on request
1,2 - <b>1,8</b>	none	16	on request
1,8 - <b>2,7</b>	20	20	on request
2,7 - <b>4</b>	35	35	on request

### Tripping Characteristic for U12/16EQ

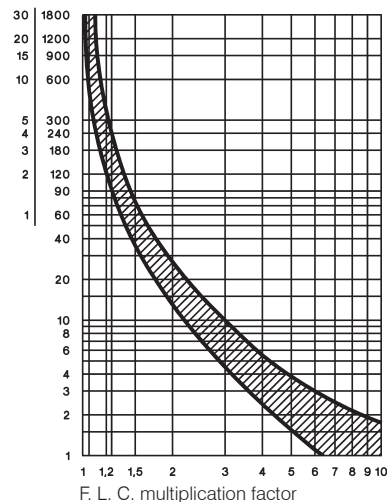
Detailed tripping times for each range see table page 124

#### with three-phase load

range 0,4-0,6 to 1,8-2,7A  
 Tripping time (Typical tolerance curve from cold condition)



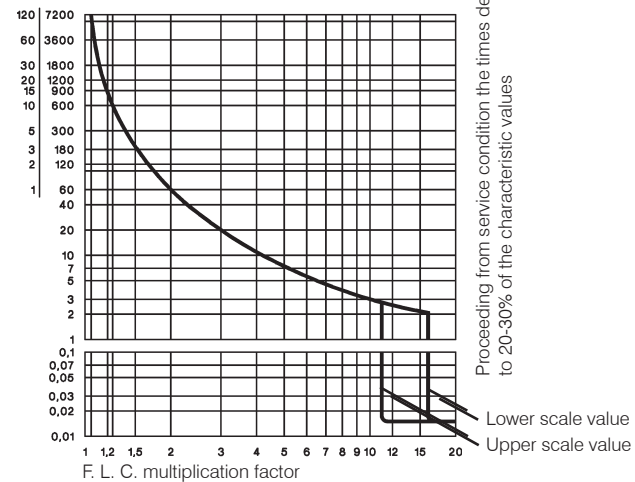
range 2,7-4 to 10-14A  
 Tripping time (Typical tolerance curve from cold condition)



### Tripping Characteristic for U12/16EM

#### with three-phase load

Tripping time (Average value of typical tolerance curves from cold condition)



1) Coordination-type according to IEC 947-4-1:  
 "2": Light contact welding accepted. Thermal overload relay must not be damaged.  
 "1": Welding of contactor and damage of the thermal overload relay allowed.



# DATA SHEET

## Thermal Overload Relays

Data according to IEC 947-4-1, IEC 947-5-1, VDE 0660, EN 60947-4-1, EN 60947-5-1

Type	U3/32	U12/16 <sup>6)</sup>	U3/42	U3/74	U85	U180	U320	U800
<b>Rated insulation voltage U<sub>i</sub></b> <sup>1)</sup> V~	690	690	690	690	750	1000	1000	1000
<b>Permissible ambient temperature</b> operation open °C storage °C			-25 to +60 -50 to +70					-25 to +55 -40 to +70
<b>Trip class according to IEC 947-4-1</b> 10A	10A	10A	10A	10A	20	10A	10A	10
<b>Cable cross-section</b> main connector solid or stranded mm <sup>2</sup> flexible mm <sup>2</sup> flexible with multicore cable end mm <sup>2</sup> Cables per clamp number	0,75-6 1-4 0,75-4 2	0,75-6+0,75-2,5 <sup>2)</sup> 0,75-4+0,5-2,5 <sup>2)</sup> 0,5-2,5+0,5-1,5 1+1	0,75-10 0,75-6 0,75-6 2	4-35 <sup>2)</sup> 6-25 <sup>2)</sup> 4-25 1	<sup>3)</sup>	<sup>7)</sup>	-	<sup>7)</sup>
auxiliary connector solid mm <sup>2</sup> flexible mm <sup>2</sup> flexible with multicore cable end mm <sup>2</sup> Cables per clamp number			0,75-2,5 <sup>2)</sup> 0,5-2,5 <sup>2)</sup> 0,5-1,5 2					1-2,5 <sup>2)</sup> 1-2,5 <sup>2)</sup> 1-2,5 <sup>2)</sup> 2

Type	U3/32	U12/16A	U12/16E U12/16EM	U12/16EQ	U3/42 U3/74	U85	U180 U320	U800
<b>Auxiliary contacts</b> <b>Rated insulation voltage U<sub>i</sub></b> <sup>1)</sup> same potential V~ different potential V~	690 440	690 -	690 440	690 440	690 250	690 440	690 440	500 500
<b>Utilization category AC15</b> Rated operational current I <sub>e</sub> 24V A 230V A 400V A 690V A	3 2 1 0,5	4 2,5 1,5 0,6	5 3 2 0,6	5 3 2 0,6	4 2,5 1,5 0,6	5 3 2 0,6	3 2 1 0,5	4 <sup>5)</sup> 2,5 1,5 0,6
<b>Utilization category DC13</b> Rated operational current I <sub>e</sub> 24V A 110V A 220V A	1 0,15 0,1	1,2 0,15 0,1	1,2 0,15 0,1	1,2 0,15 0,1	1,2 0,15 0,1	1,2 0,15 0,1	1 0,15 0,1	1,2 0,15 0,1
<b>Short circuit prot.</b> (without welding 1kA) highest fuse rating gL (gG) A	4	4	6	6	6	6	4	6

Type	U3/32	U12/16	U12/16E	U3/42	U3/42	U3/74	U3/74	U85
Setting range	all	to 23A	22 - 30A	to 28A	28 - 42A	to 52A	52 - 65A	all
<b>Power loss per current path (max.)</b> minimum setting value W maximum setting value W	1,1 2,3	1,1 2,3	1,7 3,7	1,3 2,6	1,3 3,3	2,0 3,7	2,9 4,5	1,1 2,5

## Data according to cULus

Type	U3/32	U12/16A	U12/16E	U3/42	U3/74	U85
<b>Rated insulation voltage</b> V~	600	600	600	600	600	600
<b>Rated current</b> A	32	23	23	42	75	85
<b>Auxiliary contacts</b> Rated voltage same potential V~ different potential V~	600 150	600 -	600 150	600 150		600 150
<b>Switching capacity AC</b> VA of aux. contacts A	500 2	500 3	500 4	600 4	600 4	600 4

## Temperature Compensation

In case of higher ambient temperature use the following formula:  
(Ambient temperature - 20) x 0,125 = correction factor in % of the full load motor current

Example: Ambient temperature 70°C, full load motor current 7A  
(70 - 20) x 0,125 = 6,25%  
Setting value: 7A + 6,25% = 7,44A

1) Suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry): U<sub>imp</sub> = 4kV (at 440V), 6kV (at 690V). Data for other conditions on request.

2) Maximum cable cross-section with prepared conductor

3) Without terminals, suitable for bushing one connector 70mm<sup>2</sup> (stranded) per phase

4) Switching capacity of the start contact: AC15 300VA, max. 1,5A, DC13 (max. 220V) 30W, max. 1,5A

5) Switching capacity of the make contact: AC15 400VA, max. 1,7A, DC13 (max. 220V) 10W, max. 1A

6) U12/16E 30: Cable cross-section for main connector like type U3/42, one connector only

7) Busbar sets see accessories page 123

# Thermal Overload Relays

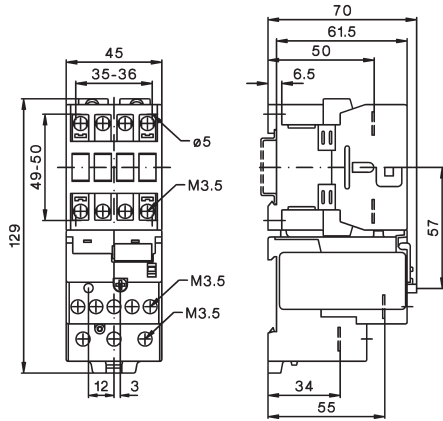
## Dimensions

K3-10N + U3/32

K3-14N

K3-18N

K3-22N

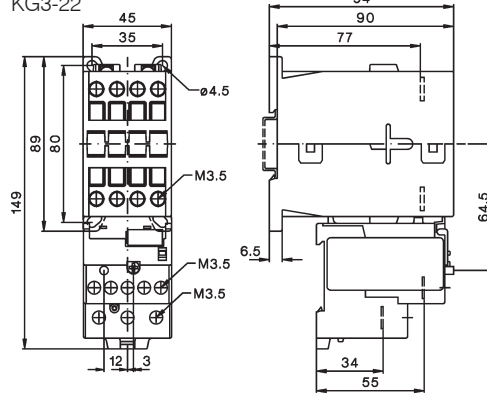


KG3-10 + U3/32

KG3-14

KG3-18

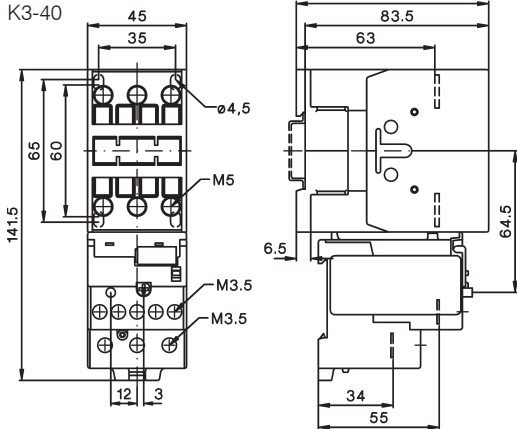
KG3-22



K3-24 + U3/32

K3-32

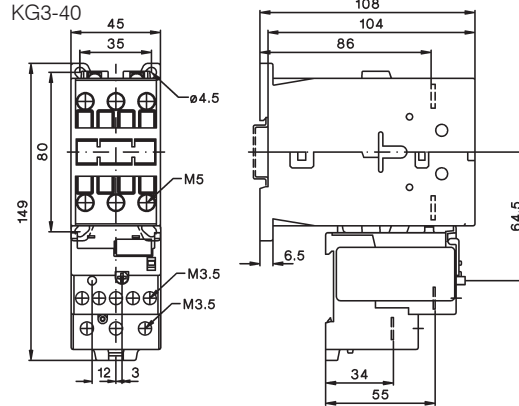
K3-40



KG3-24 + U3/32

KG3-32

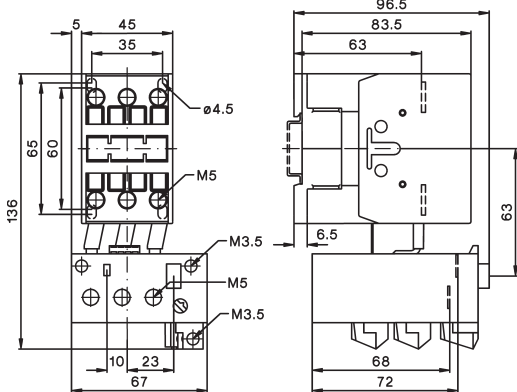
KG3-40



K3-24 + U3/42

K3-32

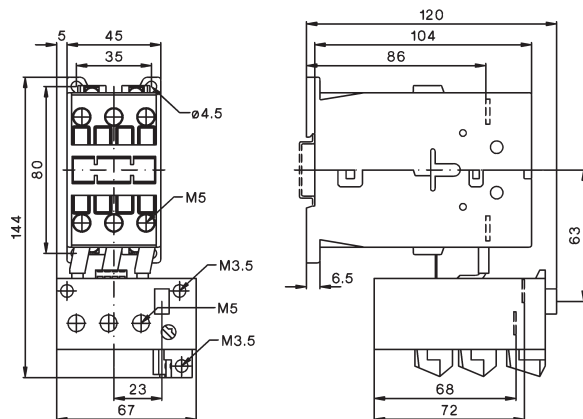
K3-40



KG3-24 + U3/42

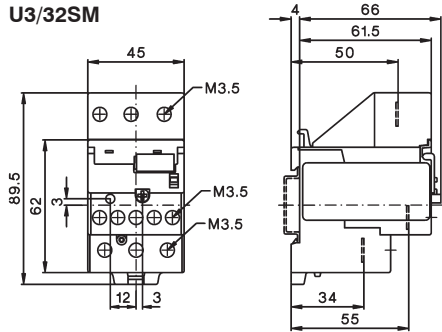
KG3-32

KG3-40



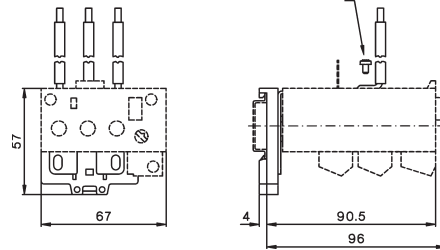
# Thermal Overload Relays

**U3/32SM**

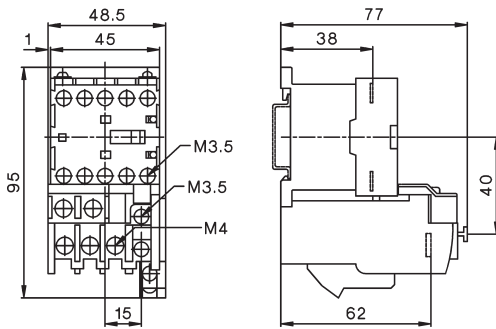


**U3/42G + LG5830-**

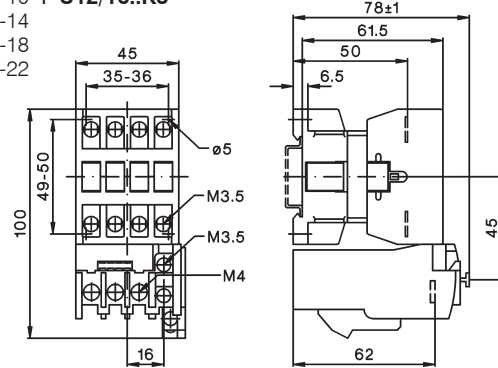
Changing of connecting wire with 1,8Nm



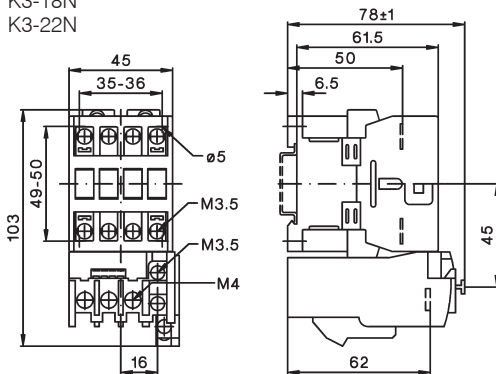
**K1-09 + U12/16.. K1**  
K1-12



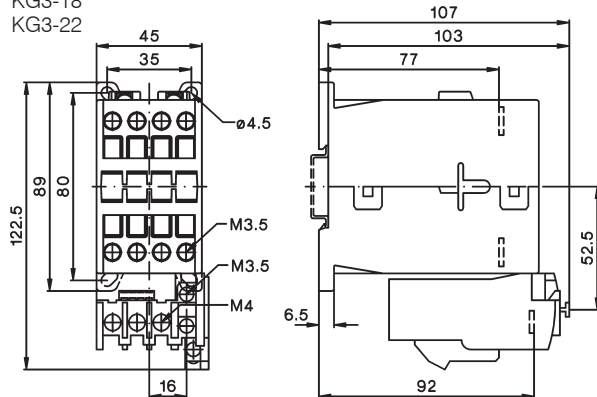
**K3-10 + U12/16..K3**  
K3-14  
K3-18  
K3-22



**K3-10N + U12/16..K3**  
K3-14N  
K3-18N  
K3-22N



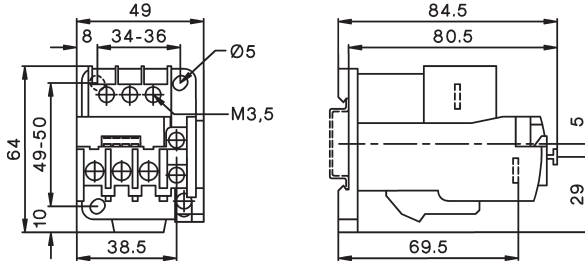
**KG3-10 + U12/16..K3**  
KG3-14  
KG3-18  
KG3-22



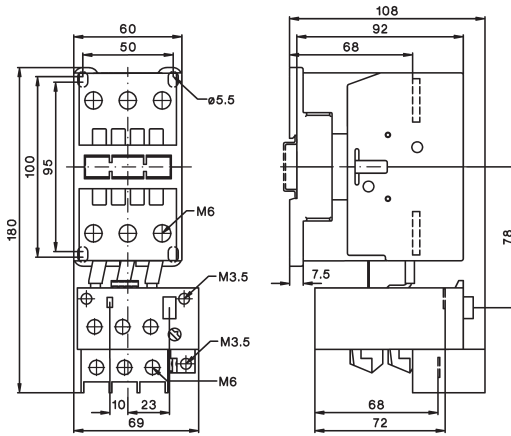
# Thermal Overload Relays

## U12SM K3

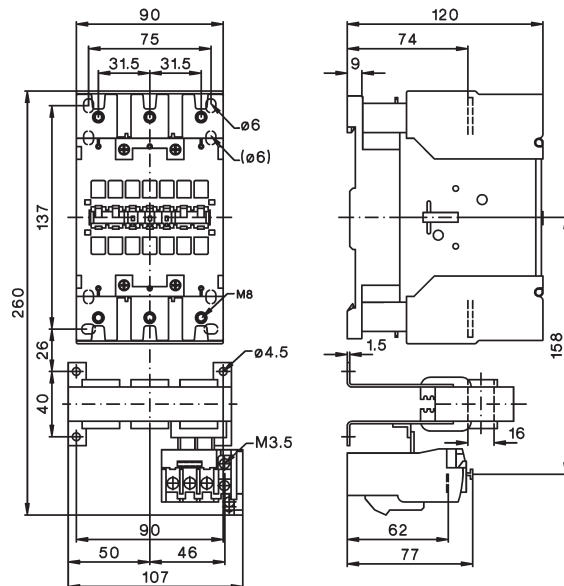
U12/16..K3 + U12SM K3 for snap-on 35mm DIN-rail according to DIN EN50022 and screw mounting (single mounting)



## K3-50 + U3/74 K3-62 K3-74



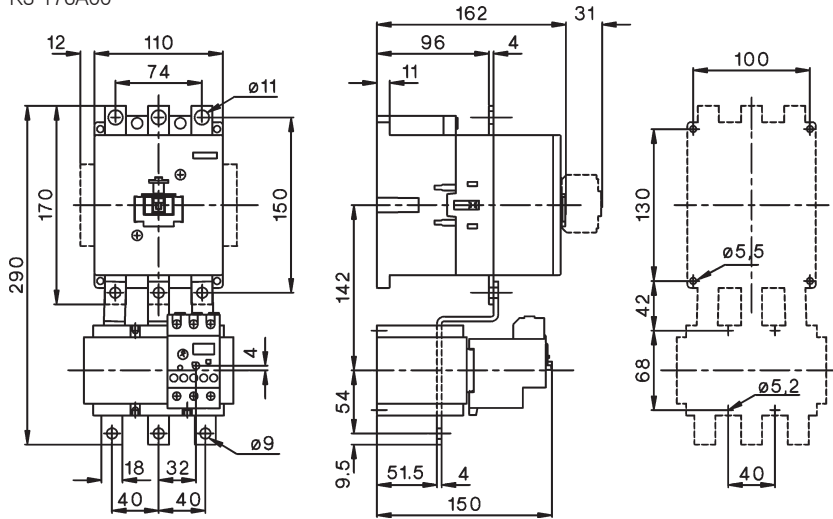
## K3-90A + U85 K3-115A



# Thermal Overload Relays

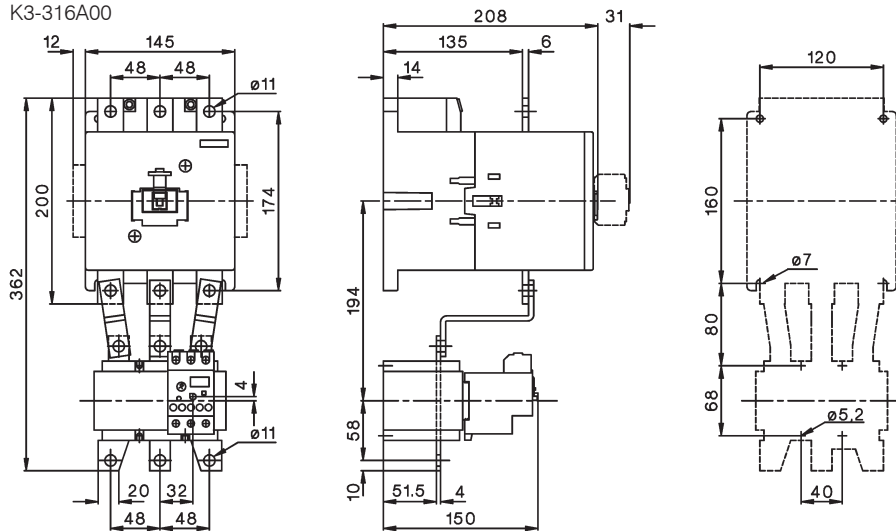
K3-151A00 + U180  
K3-176A00

Mounting holes



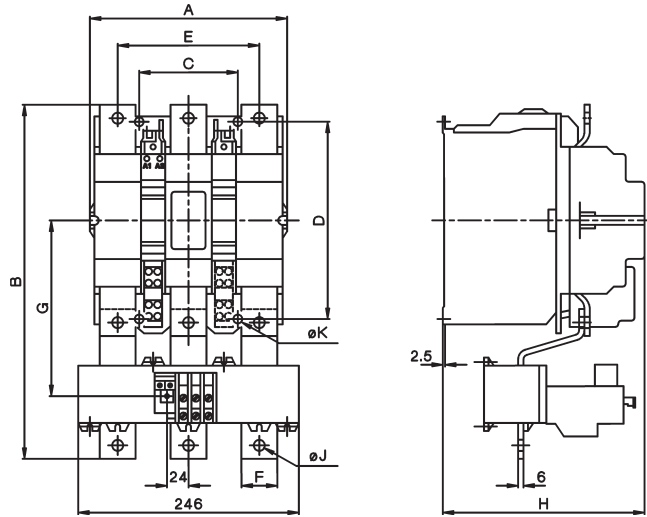
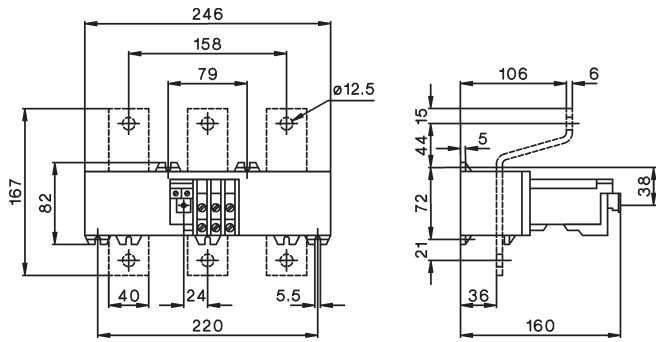
K3-210A00 + U320  
K3-260A00  
K3-316A00

Mounting holes



# Thermal Overload Relays

## U800



U800 with	A	B	C	D	E	F	G	H	J	K
<b>K3-450</b>	220	372	110	220	158	40	185	225	12,5	9
<b>K3-550</b>	220	395	110	220	158	40	196	225	12,5	9
<b>K3-700</b>	280	487	175	280	202	50	257	291	14,5	11
<b>K3-860</b>	280	540	175	280	202	50	280	291	14,5	11