Thermal Overload Relays

YS1T-RHA thermal overload relays are designed to meet the heating characteristics of induction motors with insulation class type E. Various functions can be selected by using the reset button and adjustment button on top of the thermal overload relay.

Key features of the YS1T Series include:

- Single-phase protection
- Bi-metallic
- Compact and sturdy
- Ambient temperature compensation mechanism
- Manual/automatic reset operation
- 3 element type with phase failure protection
- Conforms to IEC Standards EN60947-1, EN60947-4-1, EN60947-5-1
- Approval standards UL508, UL File No. E158813

Ordering Information

■ THERMAL OVERLOAD RELAYS

- Part number is indicated on the label of the thermal overload relay.

YS1T-RHA □ □□□D

Completed Part Number of Thermal Overload Relay

① Product Series

② Applicable Maximum Motor Current
- **25F:** 25A, contactor sizes 9F,12F, 20F, 25F
- **38F:** 40A, contactor sizes 32F, 38F
- **65F:** 65A, contactor sizes 40F, 50F, 65F
- **125F:** 125A, contactor sizes 80F, 100F, 125F
- **150F:** 150A, contactor sizes 150F or 180F
- **180F:** 180A, contactor sizes 150F or 180F
- ***300F:** 300A, contactor size 220F or 300F
- ***400F:** 400A, contactor size 220F or 300F

Note: *With Current Transformer (CT)

④ Function

D: 3-element Type with Phase Failure Protection

③ Current setting range code	Adjustable current range	Current setting range code	Adjustable current range
P13 :	0.1 - 0.16	43P :	37 - 50
P20 :	0.16 - 0.25	56P :	48 - 65
P30 :	0.25 - 0.4	68P :	55 - 80
P50 :	0.4 - 0.63	80P :	65 - 95
P80 :	0.63 - 1	105 :	85 - 125
1P3 :	1 - 1.6	120* :	96 - 155
1P5 :	1.25 - 2	135 :	110 - 160
2P0 :	1.6 - 2.5	155 :	125 - 185
3P0 :	2.5 - 4	160* :	128 - 200
5P0 :	4 - 6	180* :	150 - 240
7P0 :	5.5 - 8	240* :	192 - 300
8P5 :	7 - 10		
11P :	9 - 13		
15P :	12 - 18		
21P :	17 - 25		
27P :	23 - 32		
32P :	28 - 36		
35P :	30 - 40	Note :*With CT	

Verify approiate current setting range code with the correct size overload using the complete part list on the following page.

Notes:
1. Use the above ordering information only when interpreting part numbers. Do not use for developing part numbers.
2. For applicable combinations of contactors and thermal overload relays, please consult following page.
3. For specifications and settings please see pages D-16 through D-34.

Thermal Overload Relays

Product Series	Current Range	Range Code	Part Number for Overload	Applicable Contactor Size
 YS1T-RHA25F	0.1-0.16A	P13	YS1T-RHA25FP13D	YS-9F YS-12F YS-20F YS-25F
	0.16-0.25A	P20	YS1T-RHA25FP20D	
	0.25-0.4A	P30	YS1T-RHA25FP30D	
	0.40-0.63A	P50	YS1T-RHA25FP50D	
	0.63-1.0A	P80	YS1T-RHA25FP80D	
	1.0-1.6A	1P3	YS1T-RHA25F1P3D	
 YS1T-RHA38F	1.25-2.0A	1P5	YS1T-RHA25F1P5D	
	1.6-2.5A	2P0	YS1T-RHA25F2P0D	
	2.5-4.0A	3P0	YS1T-RHA25F3P0D	
	4.0-6.0A	5P0	YS1T-RHA25F5P0D	
	5.5-8.0A	7P0	YS1T-RHA25F7P0D	
	7.0-10.0A	8P5	YS1T-RHA25F8P5D	
 YS1T-RHA65F	9.0-13.0A	11P	YS1T-RHA25F11PD	
	12.0-18.0A	15P	YS1T-RHA25F15PD	
	17.0-25.0	21P	YS1T-RHA25F21PD	
	9-13A	11P	YS1T-RHA38F11PD	YS-32F YS-38F
	12-18A	15P	YS1T-RHA38F15PD	
 YS1T-RHA125F	17-25A	21P	YS1T-RHA38F21PD	
	23-32A	27P	YS1T-RHA38F27PD	
	28-36A	32P	YS1T-RHA38F32PD	
	30-40A	35P	YS1T-RHA38F35PD	
	12-18A	15P	YS1T-RHA65F15PD	YS-40F YS-50F YS-65F
	17-25A	21P	YS1T-RHA65F21PD	
 YS1T-RHA150F	23-32A	27P	YS1T-RHA65F27PD	
	28-36A	32P	YS1T-RHA65F32PD	
	30-40A	35P	YS1T-RHA65F35PD	
	37-50A	43P	YS1T-RHA65F43PD	
	48-65A	56P	YS1T-RHA65F56PD	
	37-50A	43P	YS1T-RHA125F43PD	YS-80F YS-100F YS-125F
	48-65A	56P	YS1T-RHA125F56PD	
 YS1T-RHA180F	55-80A	68P	YS1T-RHA125F68PD	
	65-95A	80P	YS1T-RHA125F80PD	
	85-125A	105	YS1T-RHA125F105D	
	65-95A	80P	YS1T-RHA150F80PD	YS-150F YS-180F
	85-125A	105	YS1T-RHA150F105D	
 *YS1T-RHA300F *YS1T-RHA400F	105-160A	135	YS1T-RHA150F135D	
	85-125A	105	YS1T-RHA180F105D	YS-150F YS-180F
	105-160A	135	YS1T-RHA180F135D	
	125-185A	155	YS1T-RHA180F155D	
	96-150A	120	YS1T-RHA300F120D	YS-220F YS-300F
	150-240A	180	YS1T-RHA300F180D	
	128-200A	160	YS1T-RHA400F160D	
	200-300A	240	YS1T-RHA400F240D	

*with current transformer

Operating and Mounting Specifications for Thermal Overload Relays

Ratings and Characteristics:

Part Number:YS1T-RHA				25F-D	38F-D	65F-D	125F-D	150F-D	180F-D	300F-D	400F-D
Contact Configuration				1NO+1NC							
Number of Elements				3							
Trip Free Reset Operation				Convertible from manual to automatic							
Ambient Temperature Compensation				-25 to +55°C							
Dial Designation				Rated current							
Setting Scale Indication				Ampere (A)							
Operation Position				± 30 with respect to the normal position (See chart on page 65)							
Tripping Class Conforming to UL 508, EN 60947-4				10							
Main Circuit	Rated Insulation Voltage (V)			750							
	Range of Setting Current (A)			0.1-25	7-40	9-65	37-125	65-160	85-185	96-240	128-320
	Stranded Wire without Ferrule	1 Conductor	mm^2	0.1-25	5-25	5-25	8-60	8-100	8-100	14-150	14-150
		2 Conductors	mm^2	1.5-10	5-16	5-16	8-22	8-50	8-50	14-80	14-80
	Solid Wire without Ferrule	1 Conductor	mm^2	1.5-6	5-25	5-25	-	-	-	-	-
		2 Conductors	mm^2	1.5-6	5-16	5-16	-	-	-	-	-

Characteristics of Auxiliary Contacts:

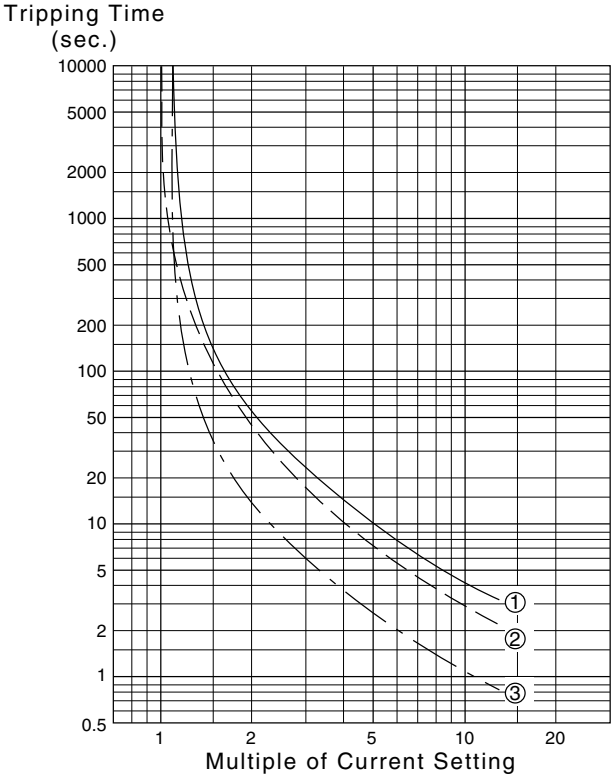
Rated Thermal Current			A	4					
Rated Operational Current per EN 60947-5-1	AC (AC-15)	Rated Voltage	V AC	24	48	110	220	380	600
		Rated Current	A	4	4	3	2	1.5	0.3
	DC (DC-13)	Rated Voltage	V DC	24	48	110	220		
		Rated Current	A	1	0.5	0.25	0.1		
Maximum Cross Section	Stranded Wire without Ferrule		mm^2 (AWG)	4 (10)					
	Solid Wire without Ferrule		mm^2 (AWG)	4 (10)					
Minimum Cross Section	Stranded Wire without Ferrule		mm^2(AWG)	1 (18)					
	Solid Wire without Ferrule		mm^2(AWG)	1 (18)					

UL / c-UL Ratings of Auxiliary Contacts:

Rated Thermal Current			A	4			
Rated Operational Current per UL 508	AC (C600)	Rated Voltage	V AC	120	240	480	600
		Rated Current	A	1.5	0.75	0.4	0.3
	DC (R300)	Rated Voltage	V DC	125	250		
		Rated Current	A	0.2	0.1		

Fig. 4 Tripping Curves

Average operating times, depending on the multiples of the current

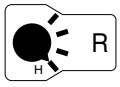
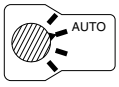
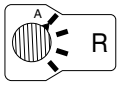
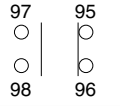
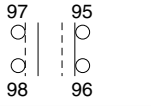
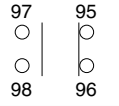
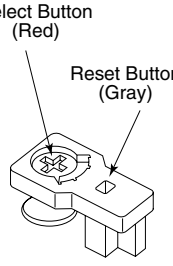
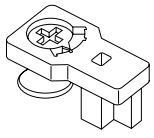
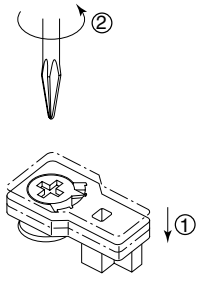
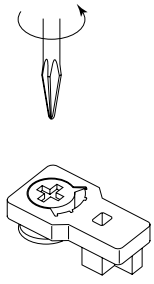


①Balanced operation, 3-phase, from cold state.

②Balanced operation, 2-phase, from cold state.

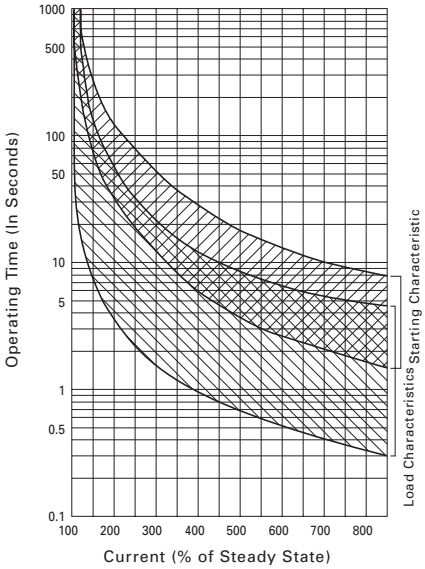
③Balanced operation, 3-phase, after a long period of set current flow (hot state).

Reset Mode Selection and Setting

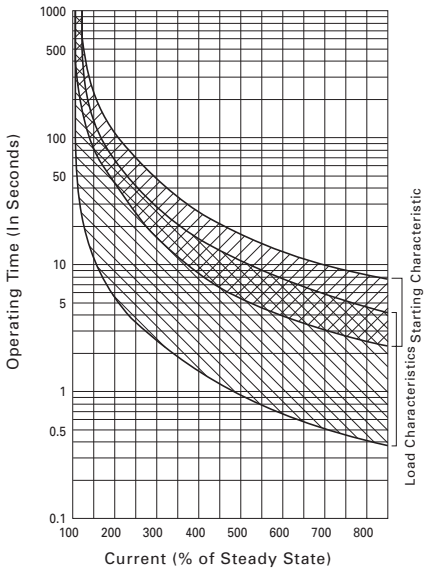
	H	HAND	AUTO	A
Function Position				
Tripping Check	NO	YES	YES	NO
Reset	Hand-Reset	Hand-Reset	Auto-Reset	Auto-Reset
Contact Condition		 Dotted line indicates the condition when the reset button is depressed.		
Setting Method	Insert screwdriver into the select button, turn it clockwise to the "H" position. 	The select button is set in "HAND" position, when shipped from factory. 	Depress the reset button to below①, insert screwdriver into the select button, turn counter-clockwise to the "AUTO" position② 	Insert screwdriver into the select button, turn counter-clockwise to the "A" position. 
Remarks	Can't check manual trip when in Hand-reset condition	Normal position for Hand-reset	Normal position for Auto-reset	Can't check manual trip when in Auto-reset condition

Operating Time Characteristics of Thermal Overload Relays

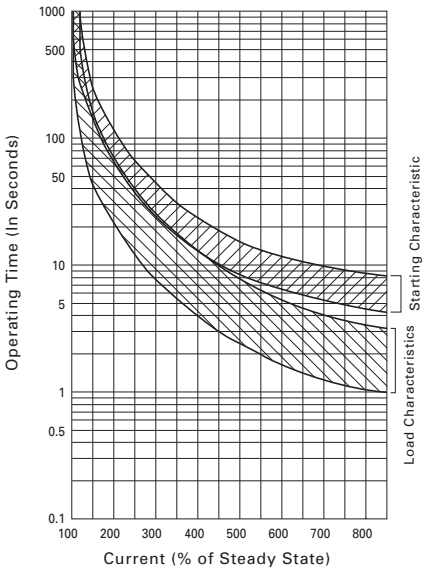
YS1T-RHA38F, YS1T-RHA65F



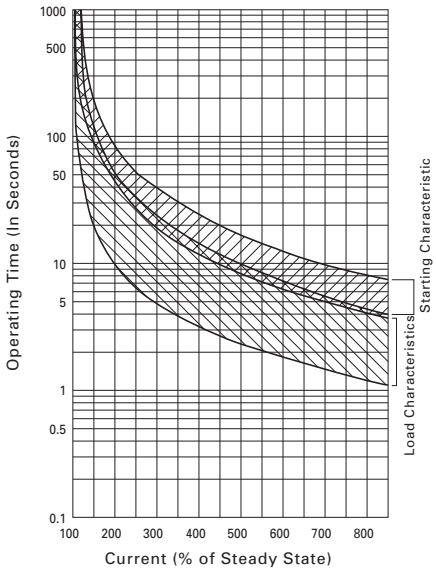
YS1T-RHA25F



YS1T-RHA125F

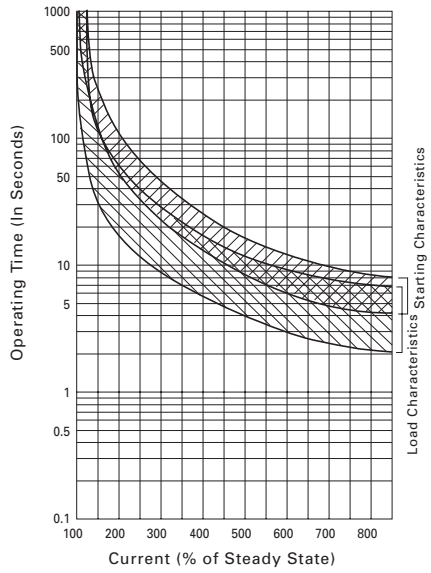


YS1T-RHA150F

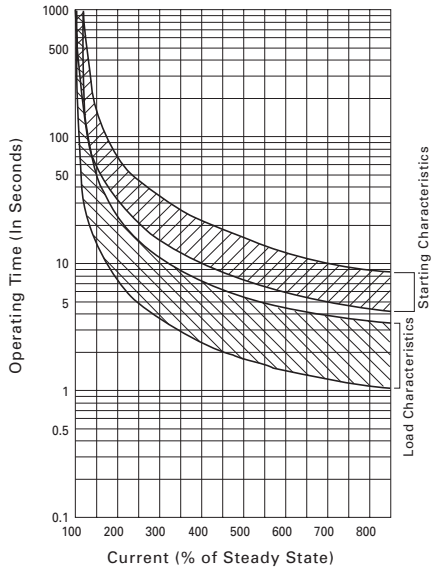


Operating Time Characteristics of Thermal Overload Relays, continued

YS1T-RHA180F



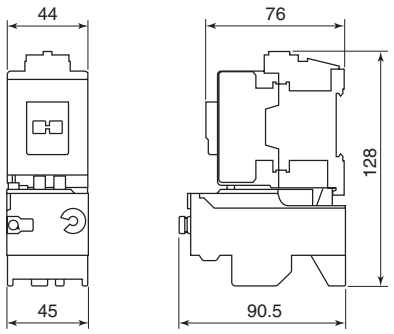
YS1T-RHA300F, YS1T-RHA400F



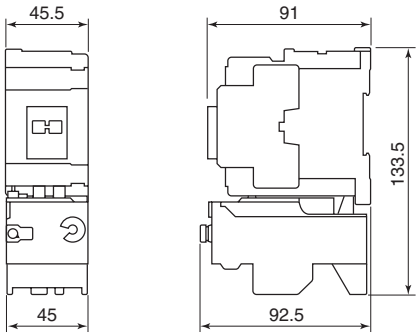
Non-Reversing AC Starters

■ Non-Reversing Starters

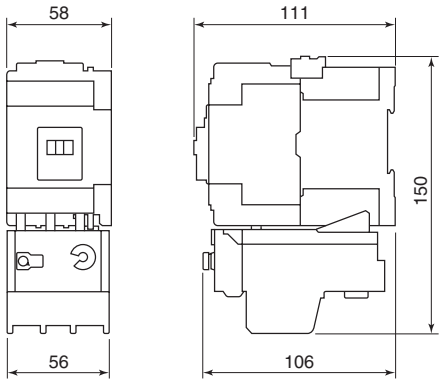
● YS2N-9F, YS2N-12F



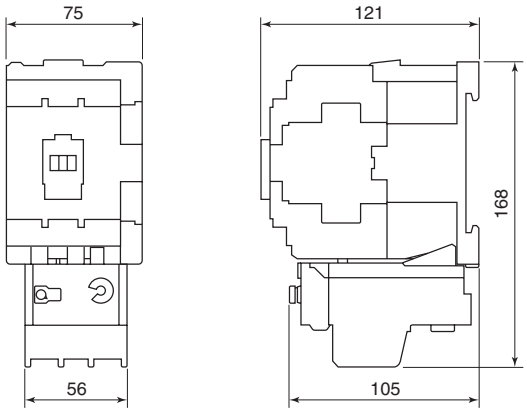
● YS2N-20F, YS2N-25F



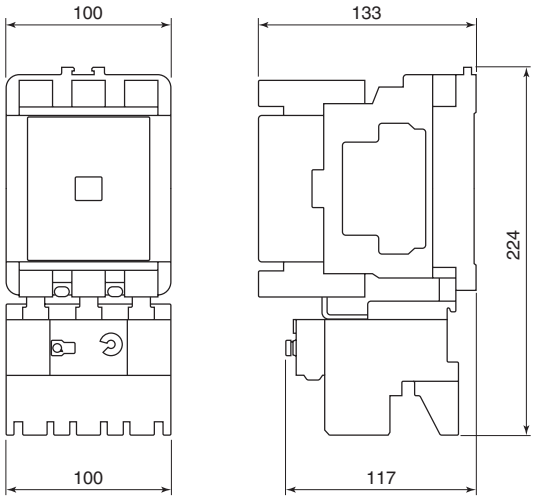
● YS2N-32F, YS2N-38F



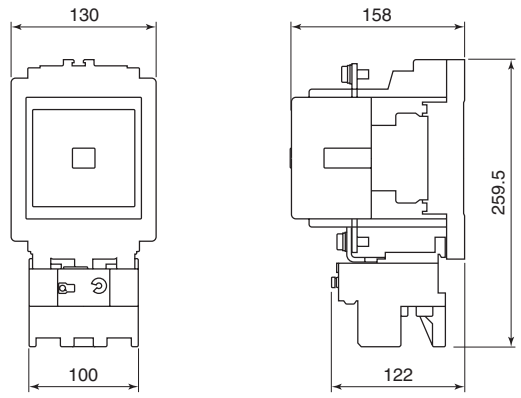
● YS2N-40F, YS2N-50F, YS2N-65F



● YS2N-80F, YS2N-100F, YS2N-125F



● YS2N-150F

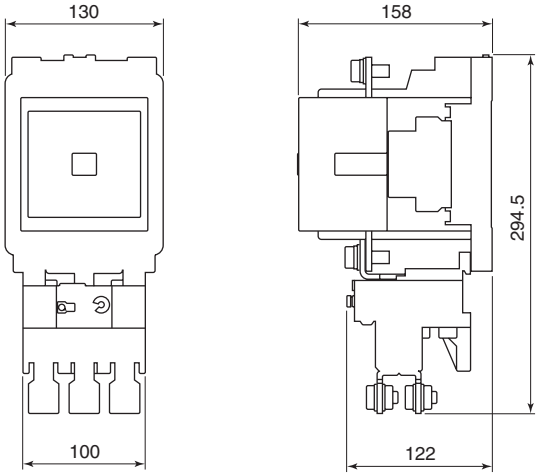


D

IEC Contactors

■ Non-Reversing Starters

● YS2N-180F



● YS2N-220F, YS2N-300F