

# Section

# D

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Spec Tech Industrial 203 Vest Ave. Valley Park, MO 63088 Phone: 888 SPECTECH  
Email: [sales@spectechind.com](mailto:sales@spectechind.com) [www.spectechind.com](http://www.spectechind.com)

### **Additional Web Resources**

- New and updated product information
- Downloadable software demos & upgrades
- Part configuration tool & cross reference
- Online stock check & ordering
- IDEC field sales & distributor search
- Online literature request
- Downloadable manuals & CAD drawings
- Manufacturer's suggested retail price list
- Product training schedule & locations
- Advertising & trade show schedules



## IDEC YS Series Contactors / Starters



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IEC Contactors

## YS Series: Superior performance and low maintenance

### Key features include:

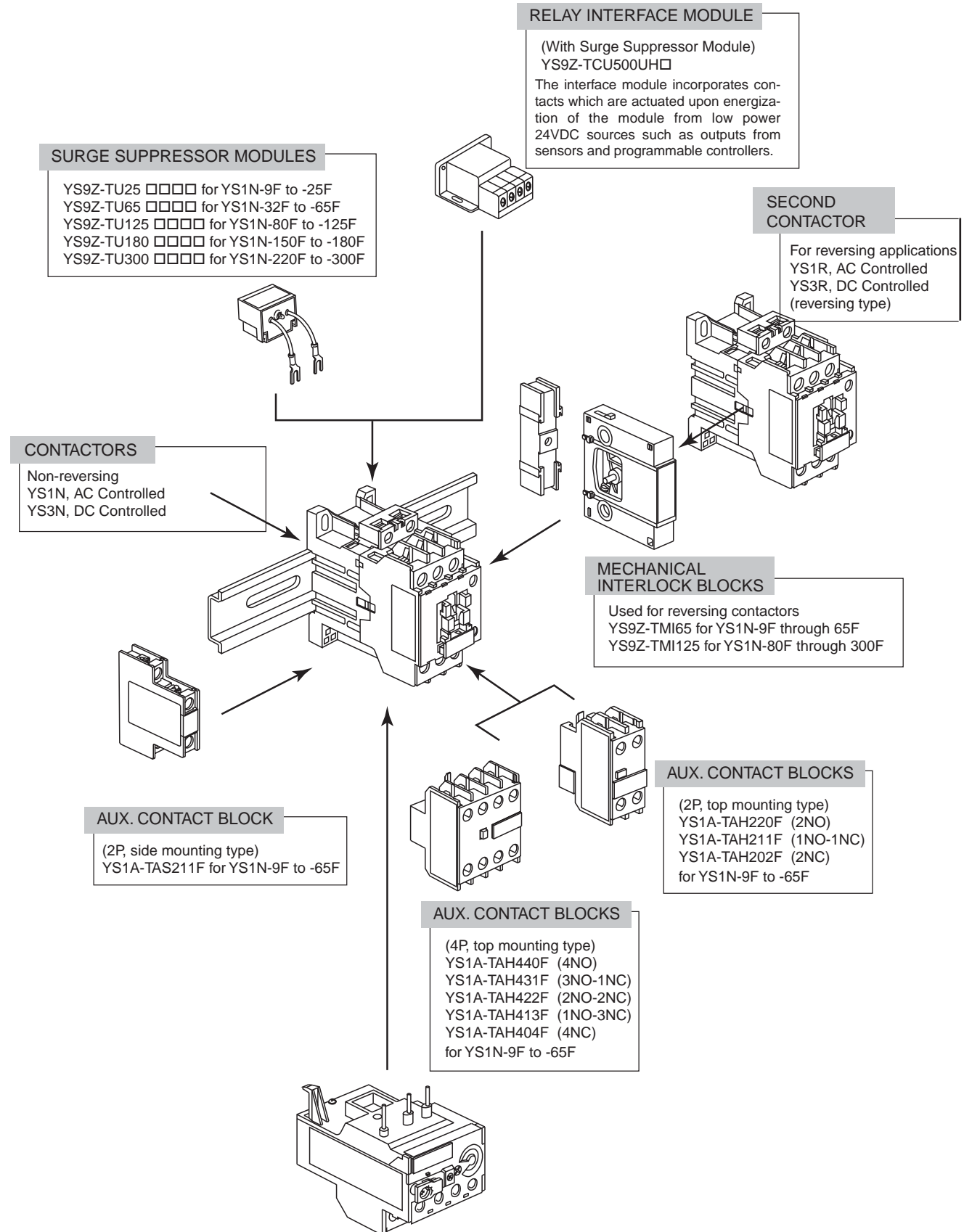
- Simple, compact, rugged electromechanical devices
- Meets IEC, UL, c-UL and other international standards
- All Contactors, Thermal Overload Relays, and Auxiliary Contact Blocks bear the CE mark
- 35mm or 75mm DIN Rail or direct panel mounting
- Bifurcated double bridge auxiliary contacts, the moving contact bridge has an "H" form; suitable for interface with electronic circuit
- Advanced design and materials, special silver-alloy long life contacts
- Cadmium-free contacts for environmental safety
- Bimetallic thermal overload relays
- Easy operation and maintenance; Direct and simple motor control
- Dual frequency 50/60 Hz coils

IEC YS Series Contactors are used in switching motor loads. Like all IDEC products, each model is engineered for long life, minimum maintenance, dependable operation, and superior performance.

Snap on accessories are available for the IDEC YS series, giving each model the flexibility to meet any application requirement.

1. Auxiliary contact blocks
  - Top mounting type (2 or 4 poles type)
  - Side mounting type (2 poles type)
2. Adjustable thermal overloads
3. Surge suppressor modules
4. Mechanical interlock blocks
5. PLC interface modules

## Selection Guide



**YS Series Contactors**

**Key features of the YS Series include:**

- Compact size
- AC and DC coil, reversing and non-reversing
- Weld-resistant silver alloy contacts
- No cadmium used in contacts
- Highly reliable auxiliary contacts use bifurcated double bridge contact form
- Direct panel mount with screws or 35mm DIN rail (9F to 65F)
- Conforms to IEC standards: EN60947-1, EN60947-4-1, EN-60947-5-1
- Approval standards: UL508 (UL File No. E67770, E184169)



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IEC Contactors

**Ordering Information**

■ IEC CONTACTORS

- Specify the maximum AC3 current code for the contactor in place of □.
- Specify the coil voltage code for the contactor in place of \*\*\*\*.
- This part number is not indicated on the label of the contactor.

YS1N-□ F11 \*\*\*\*

Completed Part Number of Contactors

① Product Series

YS1N: Non-reversing contactor, AC controlled  
 YS1R: Reversing contactor, AC controlled  
 YS3N: Non-reversing contactor, DC controlled  
 YS3R: Reversing contactor, DC controlled

② a) Approximate Maximum AC3 Current

*AC or DC Controlled Contactors*  
 9:9A, 12:12A, 20:20A, 25:25A, 32:32A, 38:38A,  
 40:40A, 50:50A, 65:65A, 80:80A, 100:100A, 125:125A

*AC Contactors Only*  
 150:150A, 180:180A, 220:220A, 300:300A

b) Type of Contactor

F: AC controlled all sizes  
 FG2: DC Controlled, sizes 9-65  
 FG: DC Controlled, sizes 80-125

③ Auxiliary Contact Configuration (Built onto contactor)

01: with 1NC, only for contactors sizes 9F-12F  
 10: with 1NO, only for contactors sizes 9F-12F  
 11: with 1NO-1NC, only for contactors sizes 20F-65F  
 22: with 2NO-2NC, only for contactors sizes 80F-300F

④ Coil Voltage

(Rated Voltage and Frequency)

A024 : AC24V 50/60Hz	AC Contactors (all sizes)
A048 : AC48V 50/60Hz	
A110 : AC110V 50/60Hz	
A120 : AC120V 50/60Hz	
A230 : AC230V 50/60Hz	
A240 : AC240V 50/60Hz	
A380 : AC380V 50/60Hz	
A415 : AC415V 50/60Hz	
A480 : AC480V 50/60Hz	
A600 : AC600V 50/60Hz	
D024 : DC 24V	DC Contactors (sizes 9-65)
D048 : DC 48V	
D110 : DC 110V	DC Contactors (sizes 80-125)
D220 : DC 220V	
M100 : DC 110V	
M200 : DC 220V	

(Other Voltages Available, Contact IDEC)

Notes:

1. Use the above ordering information only when interpreting part numbers. Do not use for developing part numbers.
2. Please see tables on following pages for proper selection.
3. For specifications please see page D-16 through page D-34.

## YS1N Non-Reversing AC Contactors



### IEC Contactors, AC Controlled

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IEC Contactors

I <sup>e</sup> (Amps)		kW AC3 Rating EN 60974-4-1				HP Rating per UL508						Auxiliary Contacts		Part Number
		3 Phase				1 Phase		3 Phase				N.O.	N.C.	
AC1	AC3	220-230V	380-400V	500V	660-690V	120V	230V	200-208V	220-240V	440-480V	550-600V			
20	8.5	2.2	4	5.5	5.5	1/3	1	2	2	5	5	0	1	YS1N-9F01****
												1	0	YS1N-9F10****
20	11.5	3	5.5	7.5	7.5	3/4	2	3	3	7.5	5	0	1	YS1N-12F01****
												1	0	YS1N-12F10****
30	15.5	4	7.5	10	10	1	3	5	5	10	13.5	1	1	YS1N-20F11****
30	22	5.5	11	15	15	2	3	7.5	7.5	15	15	1	1	YS1N-25F11****
50	30	7.5	15	18.5	18.5	2	5	7.5	10	20	20	1	1	YS1N-32F11****
60	37	11	18.5	22	30	3	7.5	10	15	30	30	1	1	YS1N-38F11****
60	37	11	18.5	22	30	3	7.5	10	15	30	30	1	1	YS1N-40F11****
80	44	15	22	30	33	3	7.5	10	15	40	40	1	1	YS1N-50F11****
80	60	18.5	30	37	37	5	10	20	20	50	40	1	1	YS1N-65F11****
135	85	22	45	55	45	7.5	15	25	25	60	60	2	2	YS1N-80F22****
150	105	30	55	65	65	-	-	30	35	60	75	2	2	YS1N-100F22****
150	114	37	60	75	75	-	-	40	50	100	100	2	2	YS1N-125F22****
200	138	45	75	90	100	-	-	40	50	100	125	2	2	YS1N-150F22****
240	179	55	95	110	110	-	-	50	60	125	125	2	2	YS1N-180F22****
260	205	65	110	132	132	-	-	60	75	150	150	2	2	YS1N-220F22****
350	300	90	160	160	200	-	-	75	100	200	200	2	2	YS1N-300F22****

Codes for Control Circuit AC Voltages 50/60 Hz								
Volts AC 50/60 Hz	24	48	120	220	240	380	415	480
Code to replace ****	A024	A048	A120	A220	A240	A380	A415	A480



Consult an IDEC representative for other coil voltages.  
 For accessories, see page D-12.  
 For specifications, see page D-16 through D-34.  
 For dimensions, see pages D-35.  
 For other application tables, see page D-51.

## YS3N Non-Reversing DC Contactors



D

IEC Contactors

## IEC Contactors, DC Controlled

I <sup>e</sup> (Amps)		KW AC3 Rating EN 60974-4-1				HP Rating per UL508						Auxiliary Contacts		Part Number
		3 Phase				1 Phase		3 Phase				N.O.	N.C.	
AC1	AC3	220-230V	380-400V	500V	660-690V	120V	230V	200-208V	220-240V	440-480V	550-600V			
20	8.5	2.2	4	5.5	5.5	1/3	1	2	2	5	5	0	1	YS3N-9FG201****
												1	0	YS3N-9FG210****
20	11.5	3	5.5	7.5	7.5	3/4	2	3	3	7.5	5	0	1	YS3N-12FG201****
												1	0	YS3N-12FG210****
30	15.5	4	7.5	10	10	1	3	5	5	10	13.5	1	1	YS3N-20FG211****
30	22	5.5	11	15	15	2	3	7.5	7.5	15	15	1	1	YS3N-25FG211****
50	30	7.5	15	18.5	18.5	2	5	7.5	10	20	20	1	1	YS3N-32FG211****
60	37	11	18.5	22	30	3	7.5	10	15	30	30	1	1	YS3N-38FG211****
60	37	11	18.5	22	30	3	7.5	10	15	30	30	1	1	YS3N-40FG211****
80	44	15	22	30	33	3	7.5	10	15	40	40	1	1	YS3N-50FG211****
80	60	18.5	30	37	37	5	10	20	20	50	40	1	1	YS3N-65FG211****
135	85	22	45	55	45	7.5	15	25	25	60	60	2	2	YS3N-80FG22****
150	105	30	55	65	65	-	-	30	35	60	75	2	2	YS3N-100FG22****
150	114	37	60	75	75	-	-	40	50	100	100	2	2	YS3N-125FG22****

Codes for Control Circuit DC Voltages, 9F through 65F				Codes for 80F/100F/125F		
Volts DC	24	48	110	220	110	220
Code to replace ****	D024	D048	D110	D220	M100	M200



Consult an IDEC representative for other coil voltages.

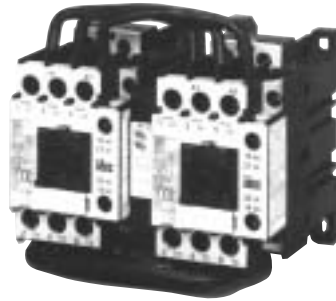
For accessories, see page D-12.

For specifications, see pages D-16 through D-34.

For dimensions, see page D-35.

For other application tables, see page D-51.

**YS1R Reversing AC Contactors**



**IEC Contactors, AC Controlled**

**D**  
**IEC Contactors**

I <sup>e</sup> (Amps)		kW AC3 Rating EN 60974-4-1				HP Rating per UL508						Auxiliary Contacts		Part Number
		3 Phase				1 Phase		3 Phase				N.O.	N.C.	
AC1	AC3	220-230V	380-400V	500V	660-690V	120V	230V	200-208V	220-240V	440-480V	550-600V			
20	8.5	2.2	4	5.5	5.5	1/3	1	2	2	5	5	0	1	YS1R-9F01****
												1	0	YS1R-9F10****
20	11.5	3	5.5	7.5	7.5	3/4	2	3	3	7.5	5	0	1	YS1R-12F01****
												1	0	YS1R-12F10****
30	15.5	4	7.5	10	10	1	3	5	5	10	13.5	1	1	YS1R-20F11****
30	22	5.5	11	15	15	2	3	7.5	7.5	15	15	1	1	YS1R-25F11****
50	30	7.5	15	18.5	18.5	2	5	7.5	10	20	20	1	1	YS1R-32F11****
60	37	11	18.5	22	30	3	7.5	10	15	30	30	1	1	YS1R-38F11****
60	37	11	18.5	22	30	3	7.5	10	15	30	30	1	1	YS1R-40F11****
80	44	15	22	30	33	3	7.5	10	15	40	40	1	1	YS1R-50F11****
80	60	18.5	30	37	37	5	10	20	20	50	40	1	1	YS1R-65F11****
135	85	22	45	55	45	7.5	15	25	25	60	60	2	2	YS1R-80F22****
150	105	30	55	65	65	-	-	30	35	60	75	2	2	YS1R-100F22****
150	114	37	60	75	75	-	-	40	50	100	100	2	2	YS1R-125F22****
200	138	45	75	90	100	-	-	40	50	100	125	2	2	YS1R-150F22****
240	179	55	95	110	110	-	-	50	60	125	125	2	2	YS1R-180F22****
260	205	65	110	132	132	-	-	60	75	150	150	2	2	YS1R-220F22****
350	300	90	160	160	200	-	-	75	100	200	200	2	2	YS1R-300F22****

**Codes for Control Circuit AC Voltages 50/60 Hz**

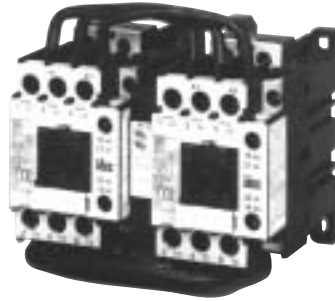
Volts AC 50/60 Hz	24	48	120	220	240	380	415	480
Code to replace ****	A024	A048	A120	A220	A240	A380	A415	A480



Consult an IDEC representative for other coil voltages.  
 For accessories, see page D-12.  
 For specifications, see page D-16 through D-34.  
 For dimensions, see pages D-35.  
 For other application tables, see page D-51



## YS3R Reversing DC Contactors



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## IEC Contactors, DC Controlled

IEC Contactors

I <sup>e</sup> (Amps)		kW AC3 Rating EN 60974-4-1				HP Rating per UL508						Auxiliary Contacts		Part Number
		3 Phase				1 Phase		3 Phase				N.O.	N.C.	
AC1	AC3	220-230V	380-400V	500V	660-690V	120V	230V	200-208V	220-240V	440-480V	550-600V			
20	8.5	2.2	4	5.5	5.5	1/3	1	2	2	5	5	0	1	YS3R-9FG201****
												1	0	YS3R-9FG210****
20	11.5	3	5.5	7.5	7.5	3/4	2	3	3	7.5	5	0	1	YS3R-12FG201****
												1	0	YS3R-12FG210****
30	15.5	4	7.5	10	10	1	3	5	5	10	13.5	1	1	YS3R-20FG211****
30	22	5.5	11	15	15	2	3	7.5	7.5	15	15	1	1	YS3R-25FG211****
50	30	7.5	15	18.5	18.5	2	5	7.5	10	20	20	1	1	YS3R-32FG211****
60	37	11	18.5	22	30	3	7.5	10	15	30	30	1	1	YS3R-38FG211****
60	37	11	18.5	22	30	3	7.5	10	15	30	30	1	1	YS3R-40FG211****
80	44	15	22	30	33	3	7.5	10	15	40	40	1	1	YS3R-50FG211****
80	60	18.5	30	37	37	5	10	20	20	50	40	1	1	YS3R-65FG211****
135	85	22	45	55	45	7.5	15	25	25	60	60	2	2	YS3R-80FG22****
150	105	30	55	65	65	-	-	30	35	60	75	2	2	YS3R-100FG22****
150	114	37	60	75	75	-	-	40	50	100	100	2	2	YS3R-125FG22****

Codes for Control Circuit DC Voltages, 9F through 65F				Codes for 80F/100F/125F		
Volts DC	24	48	110	220	110	220
Code to replace ****	D024	D048	D110	D220	M100	M200



Consult an IDEC representative for other coil voltages.

For accessories, see page D-12.

For specifications, see page D-16 through D-34.

For dimensions, see pages D-35.

For other application tables, see page D-51



## 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 appropriate 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		YS-32F YS-38F	
	12.0-18.0A	15P	YS1T-RHA25F15PD			
	17.0-25.0	21P	YS1T-RHA25F21PD			
	9-13A	11P	YS1T-RHA38F11PD			
	12-18A	15P	YS1T-RHA38F15PD			
	17-25A	21P	YS1T-RHA38F21PD			
 YS1T-RHA125F	23-32A	27P	YS1T-RHA38F27PD	YS-40F YS-50F YS-65F		
	28-36A	32P	YS1T-RHA38F32PD			
	30-40A	35P	YS1T-RHA38F35PD			
	12-18A	15P	YS1T-RHA65F15PD			
	17-25A	21P	YS1T-RHA65F21PD			
	23-32A	27P	YS1T-RHA65F27PD			
 YS1T-RHA150F	28-36A	32P	YS1T-RHA65F32PD			YS-80F YS-100F YS-125F
	30-40A	35P	YS1T-RHA65F35PD			
	37-50A	43P	YS1T-RHA65F43PD			
	48-65A	56P	YS1T-RHA65F56PD			
	37-50A	43P	YS1T-RHA125F43PD			
	48-65A	56P	YS1T-RHA125F56PD			
 YS1T-RHA180F	55-80A	68P	YS1T-RHA125F68PD		YS-150F YS-180F	
	65-95A	80P	YS1T-RHA125F80PD			
	85-125A	105	YS1T-RHA125F105D			
	65-95A	80P	YS1T-RHA150F80PD			
	85-125A	105	YS1T-RHA150F105D			
	105-160A	135	YS1T-RHA150F135D			
 *YS1T-RHA300F *YS1T-RHA400F  *with current transformer	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				

## YS Series Starters

### Ordering Instructions for an Assembled Starter

#### ■ STARTERS (Contactors with Thermal Overload Relay)

- Select the appropriate contactor (AC or DC, reversing or non-reversing) from pages D-5 through D-8.
- Select the correct size overload from page D-9 through D-10.
- The complete assembled part number is the same as the contactor with the following changes:  
(See examples below)

YS2R - FD 11 \*\*\*\* T###

Completed Part Number of Reversing Starter

① Product Series

YS1N contactor ----> **YS2N** AC non-reversing Starter  
 YS1R contactor ----> **YS2R** AC reversing Starter  
 YS3N contactor ----> **YS4N** DC non-reversing Starter  
 YS3R contactor ----> **YS4R** DC reversing Starter

② Maximum AC3 Current (replaced exactly from contactor P/N)

- F:  is replaced by size, 9-300 for AC controlled
- FG2:  is replaced by size, 9-65 for DC controlled
- FG:  is replaced by size, 80-125 for DC controlled

③ Thermal Overload Relay

D: 3-element Type with Phase Failure Protection

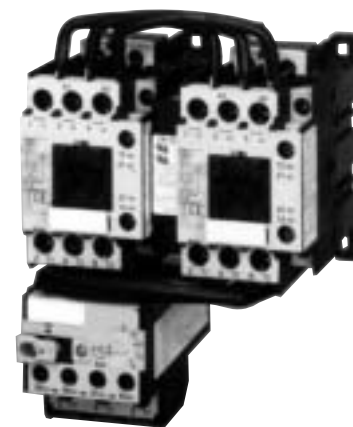
④ Auxiliary Contact Configuration (Replaced exactly from contactor P/N)

- 01: with 1NC, for contactor sizes 9F-12F
- 10: with 1NO, for contactor sizes 9F-12F
- 11: with 1NO-1NC, for contactor sizes 20F-65F
- 22: with 2NO-2NC, for contactor sizes 80F-300F

⑤ Coil Voltage (Replaced exactly from contactor P/N)

⑥ Thermal Overload Relay, Type YS1T-RHA

T: Thermal Overload Relay +  
 ###: Three character code designating of Current Setting **Range Code** (See page D-10.)



EXAMPLE #1 :

Contactor : YS1R - 9F 10A 120 + Overload: YS1T-RHA25F5P0D

①    ②   ④   ⑤
⑥

STARTER: **YS2R-9FD10A120T5P0**

①    ② ③ ④   ⑤   ⑥

EXAMPLE #2 :






Contactor : YS3N - 65 FG2 11D 024 + Overload: YS1T-RHA65F43PD

①    ②    ④   ⑤
⑥





STARTER: **YS4N-65FG2D11D024T43P**

①    ②    ③ ④   ⑤   ⑥

## Accessories

Accessory	Description				Part Number	Notes	
<b>Auxiliary Contact Blocks</b> 	Number of Poles	Mounting Style	Contact Configuration			Auxiliary contacts only available for contactors from 9F through 65F.	
			NO	NC			
	2 Poles	Side	1	1			YS1A-TAS211F
			0	2			YS1A-TAH202F
			1	1			YS1A-TAH211F
			2	0			YS1A-TAH220F
	4 Poles	Top	0	4			YS1A-TAH404F
			1	3			YS1A-TAH413F
			2	2			YS1A-TAH422F
			3	1			YS1A-TAH431F
	4	0	YS1A-TAH440F				
<b>Replacement Auxiliary Contact Block</b>	2 Poles	Side	1	1	YS1A-TAS211FL	Replacements for attached auxiliary contact blocks on contactors 80F through 300F	
<b>Power Wire Kits</b> 	For use with YS-9F through YS-12F				YS9Z-KIF411344-A		
	For use with YS-20F through YS-25F				YS9Z-KIF411345-A		
	For use with YS-32F through YS-38F				YS9Z-KIF411346-A		
	For use with YS-40F through YS-65F				YS9Z-KIF411347-A		
	For use with YS-80F through YS-125F				YS9Z-KIF411348-A		
	For use with YS-150F				YS9Z-KIF411588-A		
	For use with YS-180F				YS9Z-KIF411588-B		
	For use with YS-220F through YS-300F				YS9Z-KIF411590-A		
<b>Mechanical Interlock</b> 	For use with YS-9F through YS-65F				YS9Z-TMI65		
	For use with YS-80F through YS-300F				YS9Z-TMI125		
<b>Marking Tags</b>	For use with YS-9F through YS-65F				YS9Z-TIP66		
<b>Overload DIN Rail Bracket</b> 	For use with YS1T-RHA65F overload				YS9Z-TIB65F		
<b>Pushbutton for Overload Reset w/ Extension Rod</b> 	<b>Assembled</b>					* Choose cap color B= Black Y= Yellow N= Gray G= Green S= Blue R= Red W=White	
	Blank Cap / No engraving				HW1B-M1RS-*T		
	Cap engraved with "R"				HW1B-M1RS-*T-ENG-R		
	Cap engraved with "RESET"				HW1B-M1RS-*T-ENG-RESET		
	<b>Sub Assembled</b>						
	Operator				HW1B-M0		
	Blank Cap / No engraving				HW1A-B1-*		
Rod (10 inch length; adjustable)				HW9Z-RS-TK2141			



## Accessories, continued

Accessory	Description		Part Number	* Applicable Size Codes		
<b>Surge Suppressor</b> 	<b>Type</b>	<b>Rated Voltage</b>				
		RC Circuit	50-127V AC	YS9Z-TU*C120	25 = YS-9F to YS-25F 65 = YS-32F to YS-65F 125 = YS-80F to YS-125F 180 = YS-150F to YS-180F 300 = YS-220F to YS-300F	
		110-240V AC	YS9Z-TU*C240			
	Varistor	50-127V AC	YS9Z-TU*V120			
		110-240V AC	YS9Z-TU*V240			
380-440V AC		YS9Z-TU*V440				
<b>Relay Interface Module</b> 	Isolates the coil of contactor from PLC output by providing an easy to mount module that takes 24V DC input and switches up to 380V AC for contactor coils. External source required for contactor coil.		YS9Z-TCU500UH*	12 = YS-9F to YS-12F 25 = YS-20F to YS-25F 38 = YS-32F to YS-38F 65 = YS-40F to YS-65F 125 = YS-80F to YS-125F 180 = YS-150F to YS-180F 300 = YS-220F to YS-300F		
<b>Star (Wye) Delta Timer</b> 	<b>Input Voltage</b>	<b>Contact Style</b>				
		100V AC to 240V AC 50/60 Hz	Star: Delayed SPST-NO Delta: Delayed SPST-NO	8-pin	GT3S-1AF20	See Section G for further information
				11-pin	GT3S-1EAF20	
			Star: Delayed SPST-NO Delta: Delayed SPST-NO Instantaneous SPST-NO	8-pin	GT3S-2AF20	
				11-pin	GT3S-2EAF20	
<b>AC Coils for AC Contactors</b>						
	For use with YS-9F through YS-12F		YS9Z-KIL70461-*	A024 = 24V AC 50/60 Hz A048 = 48V AC 50/60 Hz A120 = 120V AC 50/60 Hz A240 = 240V AC 50/60 Hz A380 = 380V AC 50/60 Hz A480 = 480V AC 50/60 Hz A600 = 600V AC 50/60 Hz		
	For use with YS-20F through YS-25F		YS9Z-KIL70462-*			
	For use with YS-32F to YS-38F		YS9Z-KIL70463-*			
	For use with YS-40F to YS-65F		YS9Z-KIL70464-*			
	For use with YS-80F to YS-125F		YS9Z-KIL70518-*			
	For use with YS-150F to YS-180F		YS9Z-KIL70466-*			
	For use with YS-220F to YS-300F		YS9Z-KIL70467-*			
<b>Replacement Coils</b> 	<b>DC Coils for DC Contactors 9F through 65F</b>					
		For use with YS-9F through YS-25F		YS9Z-KIL70562-*	D024 = 24V DC D048 = 48V DC D110 = 110V DC D220 = 220V DC	
		For use with YS-32F through YS-38F		YS9Z-KIL70564-*		
		For use with YS-40F through YS-65F		YS9Z-KI411880-*		
	<b>DC Coils for DC Contactors 80F through 125F</b>				D110 = 110V DC D220 = 220V DC	
		For use with YS-80F through YS-125F #		YS9Z-KIL70519-*		
	<b>AC/DC Module for 80F through 125F DC coils only</b>				Used in conjunction with YS9Z-KIL-70519-* for DC coils 80F through 125F only.	
		100V AC/DC Module for YS-80F through YS-125F		YS9Z-KIFCA840546A		
		200V AC/DC Module for YS-80F through YS-125F		YS9Z-KIFCA840546B		



# — YS9Z-KIL70519\* is available ONLY in 110V (D110) or 220V (D220) models.










## Accessories, continued

Accessory	Description	Part Number
		each part number is for ONE (1) main contact
 <p><b>6 pieces required per contactor</b></p>	<b>Stationary Main Contacts</b>	
	For use with YS-20F	YS9Z-KIF409056-A
	For use with YS-25F	YS9Z-KIF409057-A
	For use with YS-32F	YS9Z-KIF410179-A
	For use with YS-38F	YS9Z-KIF410180-A
	For use with YS-40F	YS9Z-KIF409083-A
	For use with YS-50F	YS9Z-KIF409083-B
	For use with YS-65F	YS9Z-KIF409083-C
	For use with YS-80F	YS9Z-KIF410697-A
	For use with YS-100F	YS9Z-KIF410697-B
	For use with YS-125F	YS9Z-KIF410697-C
	For use with YS-150F	YS9Z-KIF410853-A
	For use with YS-180F	YS9Z-KIF410854-A
	For use with YS-220F	YS9Z-KIF411841-A
For use with YS-300F	YS9Z-KIF411842-A	
 <p><b>3 pieces required per contactor</b></p>	<b>Moving Main Contacts</b>	
	For use with YS-20F	YS9Z-KIF409059-A
	For use with YS-25F	YS9Z-KIF409060-A
	For use with YS-32F	YS9Z-KIF410167-A
	For use with YS-38F	YS9Z-KIF410168-A
	For use with YS-40F	YS9Z-KIF409155-A
	For use with YS-50F	YS9Z-KIF409155-B
	For use with YS-65F	YS9Z-KIF409155-C
	For use with YS-80F	YS9Z-KIF410698-A
	For use with YS-100F	YS9Z-KIF410698-B
	For use with YS-125F	YS9Z-KIF410698-C
	For use with YS-150F	YS9Z-KIF410856-A
	For use with YS-180F	YS9Z-KIF410857-A
	For use with YS-220F	YS9Z-KIF411843-A
For use with YS-300F	YS9Z-KIF411844-A	



All part numbers refer to one piece quantity (not sets).

## Accessories, continued

Part Number	Description	For Use With
<b>BAA1000</b> 	35mm Aluminum DIN Rail 7.5 mm deep 1 meter long	YS1N-9F through YS1N-38F Contactors
<b>BNDN1000</b> 	35mm Aluminum DIN Rail 10.5 mm deep. 1 meter long	YS1N-9F through YS1N-38F Contactors
<b>YS9Z-TIP66 Markers</b> 	Plastic replacement markers sold in 100 piece packs	YS-9F through YS-65F series contactors, overloads relays and top mount auxiliary contact blocks.
<b>BNL8</b> 	DIN Rail End Stop used to prevent contactors from sliding on DIN rails	YS1N-32F/YS1N-38F & YS1R reversing contactors
<b>BNL5</b> 	DIN Rail End Stop used to prevent contactors from sliding on DIN rails	YS1N-9F YS1N-12F YS1N-20F YS1N-25F Contactors
<b>SR2P-05C</b> 	8-pin DIN mount Finger-safe (IP20) screw terminal socket	GT3S-1AF20 timer (8 pin) GT3S-2AF20 timer (8 pin)
<b>SR2P-06</b> 	8-pin DIN mount screw terminal socket open terminal construction	GT3S-1AF20 timer (8 pin) GT3S-2AF20 timer (8 pin)
<b>SR3P-05C</b> 	11-pin DIN mount finger-safe (IP20) screw terminal socket	GT3S-1EAF20 timer (11pin) GT3S-2EAF20 timer (11pin)
<b>SR3P-06</b> 	11-pin DIN mount screw terminal socket open terminal construction	GT3S-1EAF20 (11 pin) GT3S-2EAF20 (11 pin)



**Specifications**

**Contactor Circuit Supply: AC**

**Characteristics**

Part Number YS1N-		9F	12F	20F	25F	32F	38F	40F	50F	65F	80F	100F	125F	150F	180F	220F	300F
Rated Insulation Voltage	V	690	690	690	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Conformity to Standards		NFC 63-110; VDE 0660; BS 5424; JEM 1038; EN60947-1, 60947-4-1; UL508															
Approvals		UL, c-UL															
Degree of Protection		Finger-safe (according to VDE 0106)															
Dry Ambient Air Temp. for Storage	1/4C	-40 to +80															
Dry Ambient Air Temp. for Operation	1/4C	-10 to +55 (0.85 to 1.1 Un)															
Operating Altitude	m	2000															
Operating Position (without derating)		±301/4 compared with the normal vertical mounting plane (see table on D-22)															

**Main Power Pole Utilization Characteristics:**

Number of Poles: 3		Part No.	9F	12F	20F	25F	32F	38F	40F	50F	65F	80F	100F	125F	150F	180F	220F	300F
Rated Operational Current	in AC3	A	9	12	18	25	30	40	40	50	65	80	105	125	150	180	220	300
	in AC1	A	20	20	30	30	50	60	60	80	80	135	150	150	200	240	260	350
Rated Operational Voltage	V	A	660	660	690	690	690	690	690	690	690	690	690	690	690	690	690	690
Maximum Thermal Current	I <sub>th</sub> (≥55°C)	A	20	20	35	35	50	60	60	80	80	135	150	150	200	240	260	350
Making Capacity	I <sub>rms</sub>	A	150	150	280	300	480	480	800	800	800	1500	1500	1500	1800	2100	2500	3500
Breaking Capacity	220-380-415-440V	A	120	150	250	300	380	480	500	600	700	800	1100	1300	1500	1800	2100	3000
I <sub>rms</sub>	500V	A	100	120	200	250	300	400	400	500	550	800	1000	1100	1200	1600	1900	2200
According to EN 60158-1	660-690V	A	90	100	120	180	250	350	350	400	430	500	750	820	1100	1200	1400	1800

**Wiring, minimum-maximum wire size:**

Stranded Wire (without ferrule)																	
1 Conductor	mm <sup>2</sup>	1-4	1-4	1.5-10	1.5-10	4-16	4-16	5-25	5-25	5-25	8-60	8-60	8-60	8-100	8-100	14-150	14-150
	AWG	18-10	18-10	16-8	16-8	12-6	12-6	10-3	10-3	10-3	8-0	8-0	8-0	8-4/0	8-4/0	4-300mcm	4-300mcm
2 Conductors	mm <sup>2</sup>	1-4	1-4	1.5-6	1.5-6	4-8	4-8	5-16	5-16	5-16	8-35	8-35	8-35	8-50	8-50	14-80	14-80
	AWG	18-10	18-10	16-10	16-10	12-8	12-8	10-5	10-5	10-5	8-2	8-2	8-2	8-1	8-1	4-3/0	4-3/0
Solid Wire (without ferrule)																	
1 Conductor	mm <sup>2</sup>	1-4	1-4	1.5-6	1.5-6	4-10	4-10	5-25	5-25	5-25	-	-	-	-	-	-	-
	AWG	18-10	18-10	16-10	16-10	12-8	12-8	10-3	10-3	10-3	-	-	-	-	-	-	-
2 Conductors	mm <sup>2</sup>	1-4	1-4	1.5-6	1.5-6	4-10	4-10	5-16	5-16	5-16	-	-	-	-	-	-	-
	AWG	18-10	18-10	16-10	16-10	12-8	12-8	10-5	10-5	10-5	-	-	-	-	-	-	-

D IEC Contactors

**Control Circuit Characteristics:**

Part Number	YS1N-		9F	12F	20F	25F	32F	38F	40F	50F	65F	80F	100F	125F	150F	180F	220F	300F	
Rated AC Control Voltage (50 or 60 Hz) : Un		V	Un: 24 to 600																
Coil Limits (≤ 55°C)																			
Operating Limits		Un	85% to 110% × Un																
Drop-Out Voltage		Un	30% to 70% × Un																
Coil Power Consumption (20°C) in Un																			
AC 50 Hz	Inrush	VA	55	55	85	85	150	150	170	170	170	276	276	276	819	819	805	805	
	Cos Ø (power factor)		0.8	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.2	0.2	
	Sealed	VA	8	8	8	8	15	15	16	16	16	40	40	40	53	53	100	100	
	Cos Ø (power factor)		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.37	0.37	
AC 60 Hz	Inrush	VA	50	50	80	80	130	130	150	150	150	231	231	231	714	714	700	700	
	Cos Ø (power factor)		0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.21	0.21	
	Sealed	VA	6	6	6	6	12	12	13	13	13	29	29	29	38	38	88	88	
	Cos Ø (power factor)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.37	0.37	
Coil Power Consumption	50 Hz	W	1.5 to 2.5	1.5 to 2.5	1.5 to 2.5	1.5 to 2.5	3.5 to 5.0	3.5 to 5.0	3.7 to 5.2	3.7 to 5.2	3.7 to 5.2	7.5 to 11	7.5 to 11	7.5 to 11	12 to 16	12 to 16	19 to 27	19 to 27	
	60 Hz	W	1.0 to 2.0	1.0 to 2.0	1.0 to 2.0	1.0 to 2.0	3.0 to 4.5	3.0 to 4.5	3.0 to 4.5	3.0 to 4.5	3.0 to 4.5	6.0 to 8.5	6.0 to 8.5	6.0 to 8.5	9.0 to 13	9.0 to 13	16 to 23	16 to 23	
Mechanical Life at Rated Control Voltage (Un) (× 10 <sup>6</sup> operating cycles)			10	10	10	10	5	5	5	5	5	5	5	5	5	5	5	5	
Switching Frequency	Mechanical	ops/h	9000	9000	9000	9000	9000	9000	9000	9000	9000	7200	7200	7200	7200	7200	5000	5000	
	Electrical AC3		1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Minimum-Maximum Wire Size																			
Stranded Wire (without ferrule)	1 Conductor	mm <sup>2</sup>	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	
		AWG	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10
	2 Conductors	mm <sup>2</sup>	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4
		AWG	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10
Solid Wire (without ferrule)	1 Conductor	mm <sup>2</sup>	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	
		AWG	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10
	2 Conductors	mm <sup>2</sup>	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4
		AWG	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10	18-10

D IEC Contactors

## Coil Resistance:

Coil Voltage	Resistance ( $\Omega$ )						
	YS1N-9F/12F	YS1N-20F/25F	YS1N-32F/38F	YS1N-40F/50F/65F	YS1N-80F/100F/125F	YS1N-150F/180F	YS1N-220F/300F
24V 50/60Hz	7.90	4.8	1.68	1.7	0.39	0.298	0.107
48V 50/60Hz	33.9	19.1	7.1	6.3	1.85	1.182	0.378
110V 50/60Hz	174.4	101	36.6	39.1	8.67	6.46	2.630
120V 50/60Hz	196.3	122	44.2	45.2	11.6	7.1	3.186
208V 50/60Hz	619.5	385	134	137.4	33.3	23.2	8.310
220V 50/60Hz	748.0	397	153	139.0	35.6	24.8	8.840
230V 50/60Hz	776.0	486	153	162.0	37.2	30	9.340
240V 50/60Hz	841.8	513	164	177.8	45.6	31.4	9.810
380V 50/60Hz	2577.0	1310	458	426.0	112	82	22.38
415V 50/60Hz	2821.1	1480	501	562.5	133	96.6	28.70
480V 50/60Hz	3166.4	2050	675	757.1	182	129.2	62.71
500V 50/60Hz	3272.7	2170	790	794.0	191	135.2	66.52
600V 50/60Hz	5136.3	3100	1162	1046.7	275	206	100.3

## Operating Time:

Contactor		50Hz						60Hz					
Frame Size	Basic Part Number	Closing		(msec)	Opening		(msec)	Closing		(msec)	Opening		(msec)
		Main	Aux. (NO)	Aux. (NC)	Main	Aux. (NO)	Aux. (NC)	Main	Aux. (NO)	Aux. (NC)	Main	Aux. (NO)	Aux. (NC)
12	YS1N-9F YS1N-12F	11 to 17	11 to 17	8 to 12	5 to 13	5 to 13	7 to 14	10 to 15	10 to 15	7 to 12	5 to 13	6 to 14	7 to 15
25	YS1N-20F YS1N-25F	14 to 22	15 to 22	9 to 16	3 to 13	6 to 13	9 to 17	13 to 20	13 to 20	9 to 13	2 to 12	7 to 13	9 to 17
38	YS1N-32F YS1N-38F	15 to 23	15 to 23	8 to 16	6 to 15	7 to 15	12 to 23	16 to 24	16 to 24	9 to 16	5 to 14	7 to 15	11 to 21
65	YS1N-40F YS1N-50F YS1N-65F	14 to 22	16 to 24	10 to 16	6 to 17	5 to 17	11 to 23	15 to 22	15 to 22	9 to 16	7 to 16	7 to 16	11 to 20
125	YS1N-80F YS1N-100F YS1N-125F	10 to 27	10 to 26	6 to 19	6 to 20	6 to 20	10 to 26	13 to 31	12 to 30	8 to 22	6 to 18	6 to 18	10 to 24
180	YS1N-150F YS1N-180F	17 to 34	16 to 31	13 to 31	8 to 25	8 to 28	12 to 29	21 to 39	20 to 36	13 to 29	5 to 22	7 to 22	11 to 29
300	YS1N-220F YS1N-300F	17 to 36	16 to 36	13 to 33	8 to 27	8 to 30	12 to 31	22 to 41	21 to 38	13 to 31	5 to 24	7 to 24	11 to 31



## Notes:

- The operating time depends on the type of contactor electromagnet and its control mode.
- The closing time is measured from the time the coil power supply is switched on to the time the main contacts first make contact.
- The opening time is measured from the time the coil power supply is switched off to the time the main contacts separate.
- The duration of the arcing time depends on the type of circuit switched by the poles.
- For normal three-phase applications the duration of the arcing time is normally less than 10 ms.
- The load is isolated from the coil power supply after a time equal to: the sum of the opening time and the arcing time.

## Contactor Circuit Supply: DC

### Operating Coil Characteristics

Part Number	Coil Voltage (V)	Exciting Current (mA)	Pick-Up Voltage (V)	Drop-Out Voltage (V)	Coil Resistance ( $\frac{1}{2}$ )	Power Consumption (W)
YS3N-9FG2 YS3N-12FG2	24V DC	214 to 262	10 to 15	5 to 10	102	5.1 to 6.4
	48V DC	108 to 132	21 to 30	10 to 20	404	5.1 to 6.4
	100V DC	51 to 64	45 to 63	21 to 40	1750	5.0 to 6.5
	200V DC	26 to 33	90 to 125	43 to 80	6870	5.1 to 6.8
YS3N-20FG2 YS3N-25FG2	24V DC	214 to 262	10 to 15	5 to 10	102	5.1 to 6.4
	48V DC	108 to 132	21 to 30	10 to 20	404	5.1 to 6.4
	100V DC	51 to 64	45 to 63	21 to 40	1750	5.0 to 6.5
	200V DC	26 to 33	90 to 125	43 to 80	6870	5.1 to 6.8
YS3N-32FG2 YS3N-38FG2	24V DC	335 to 410	11 to 16	4 to 8	65.1	8.0 to 9.9
	48V DC	165 to 202	23 to 32	8 to 16	264	7.8 to 9.8
	100V DC	76 to 94	48 to 66	18 to 32	1190	7.5 to 9.5
	200V DC	36 to 45	96 to 132	36 to 64	4970	7.0 to 9.1
YS3N-40FG2 YS3N-50FG2 YS3N-65FG2	24V DC	516 to 630	13 to 17	4 to 7	42.3	12.3 to 15.2
	48V DC	215 to 263	27 to 33	8 to 13	203	10.3 to 12.7
	100V DC	103 to 127	58 to 69	17 to 27	880	10.2 to 12.8
	200V DC	53 to 66	116 to 137	35 to 53	3390	10.4 to 13.3
YS3N-80FG2 YS3N-100FG2 YS3N-125FG2	100V DC	19 to 24	76 to 84	43 to 54	—	—
	200V DC	11 to 15	133 to 144	86 to 98	—	—

### Standard Operating Time

Part Number		Coil Applied Voltage 100%Uc					
		Closing Time (ms)			Opening Time (ms)		
		Main	Aux. (NO)	Aux. (NC)	Main	Aux. (NO)	Aux. (NC)
YS3N-9F	1N0	38 to 45	38 to 45	—	5 to 10	5 to 10	—
YS3N-12F	1NC	38 to 45	—	38 to 45	6 to 12	—	8 to 13
YS3N-20FG2, -25FG2		45 to 53	45 to 53	36 to 46	6 to 12	6 to 12	10 to 16
YS3N-32FG2, -38FG2		59 to 68	57 to 66	46 to 56	7 to 19	7 to 19	14 to 23
YS3N-40FG2, -50FG2, -65FG2		46 to 56	46 to 56	34 to 47	23 to 32	23 to 32	27 to 36
YS3N-80FG2, -100FG2, -125FG2		32 to 42	32 to 42	24 to 36	36 to 56	36 to 56	42 to 62

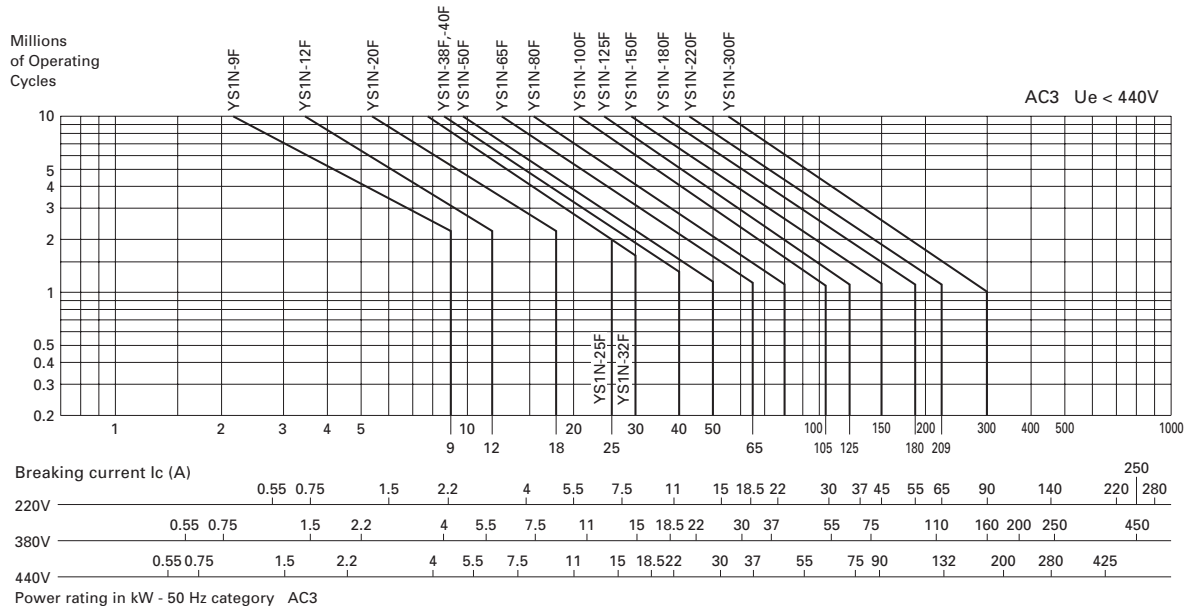
### Operating Limited Distances

Part Number	Rated Operational Voltage 100VDC			Rated Operational Voltage 200VDC		
	Coil Applied Voltage 100VDC			Coil Applied Voltage 200VDC		
	Wire Sectional Area			Wire Sectional Area		
	1.25mm <sup>2</sup>	2mm <sup>2</sup>	3.5mm <sup>2</sup>	1.25mm <sup>2</sup>	2mm <sup>2</sup>	3.5mm <sup>2</sup>
YS3N-9FG2, -12FG2	3.2 km	5.0 km	9.2 km	12.6 km	19.7 km	36.4 km
YS3N-20FG2, -25FG2	3.2 km	5.0 km	9.2 km	12.6 km	19.7 km	36.4 km
YS3N-32FG2, -38FG2	2.1 km	3.4 km	6.3 km	9.1 km	14.3 km	26.3 km
YS3N-40FG2, -50FG2, -65FG2	1.6 km	2.5 km	4.6 km	6.2 km	9.7 km	18.0 km
YS3N-80FG2, -100FG2, -125FG2	0.136 km	0.213 km	0.392 km	0.507 km	0.794 km	1.46 km

**Electrical Life Curves**

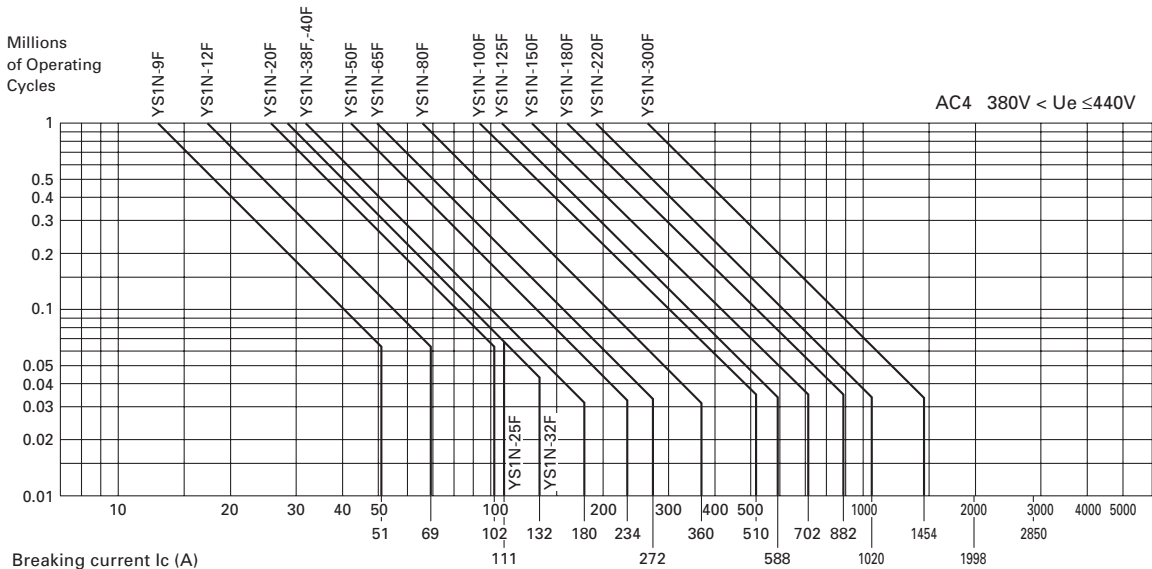
■ **Electrical Life Curves**

Fig.1 Utilization Category AC3



Control of three-phase squirrel cage motors switching off during running  
 The breaking current in AC3,  $I_c$ , is equal to  $I_e$ . ( $I_e$  = rated operational current of the motor)

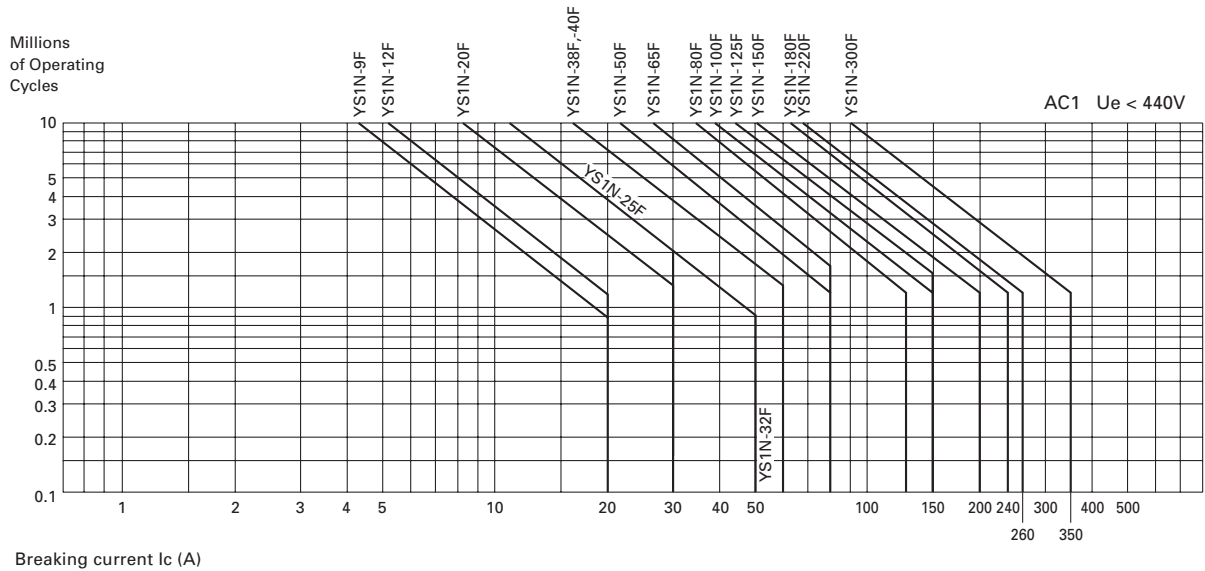
Fig. 2 Utilization Category AC4



Control of three-phase squirrel cage motors switching off with locked rotor  
 The breaking current in AC4,  $I_c$ , is equal to  $6 \times I_e$ . ( $I_e$  = rated operational current of the motor)

**IEC Contactors**

Fig. 3 Utilization Category AC1



Switching a resistive circuit ( $\cos \phi \geq 0.95$ )  
 The breaking current in AC1,  $I_c$ , is equal to  $I_e$ . ( $I_e$  = rated operational current of the load)

**Electrical Life in Mixed AC3/AC4 Duty Applications**

**By calculation:**

In a mixed AC3/AC4 application, electrical life can be calculated using the following formula:

$$L = \frac{A3}{1 + \frac{P}{100} \left( \frac{A3}{A4} - 1 \right)}$$

$$1 + \frac{P}{100} \left( \frac{A3}{A4} - 1 \right)$$

L: Electrical life in mixed AC3/AC4 application  
 A3: Electrical life for breaking current equal to the rated current of the motor. (AC3 from Fig. 1)  
 A4: Electrical life for a breaking current during starting or plug braking equal to  $I_c = K I_e$ , where:  
 $K \leq 6$

$I_e$  = rated motor current  
 (AC4 from fig. 2)

P/100: ratio of switching off during starting or plug braking

**Operating and Mounting Specifications for Contactors and Starters**

## 1. Operating Specifications

<b>Ambient Temperature</b>	-5° to +40°C
<b>Temperature inside the control panel</b>	-5° to +55°C
<b>Relative humidity</b>	45% to 85% RH
<b>Altitude</b>	No more than 2,000m
<b>Vibration resistance</b>	10 to 50Hz 19.6m/s <sup>2</sup> (2G)
<b>Shock resistance</b>	49.0m/s <sup>2</sup> (5G)
<b>Storage temperature</b>	-40°C to +70°C

**IEC Contactors**

## 2. Mounting

### Direct Mounting

1. Install the product in a dry area with minimal dust and vibration.
2. Standard mounting is done on a vertical surface in the directions shown in Figure 1. However, a mounting angle up to 30 degrees is allowed in each direction as shown in Figure 2. Operational characteristics of the product, when mounted with these angles are listed on the next page.

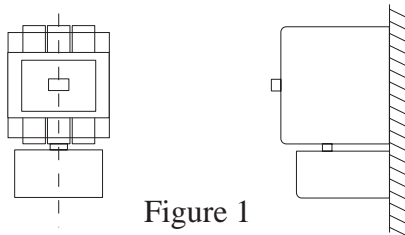


Figure 1

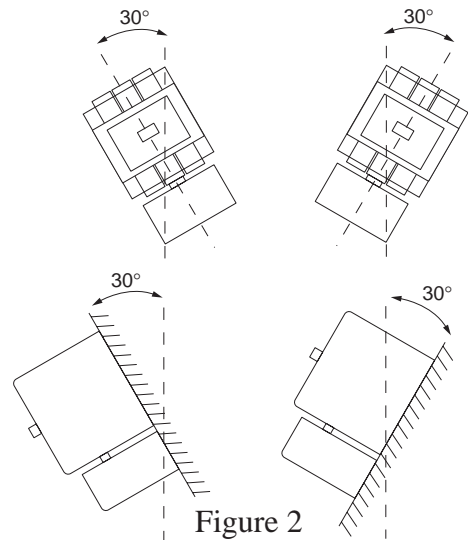


Figure 2

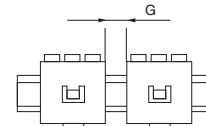
### DIN Rail Mounting

YS Series electromagnetic contactors/starters YS1N/YS2N-9F through -38F models can be mounted on 35mm wide DIN rail, and YS1N/YS2N-40F through -65F models can be mounted on 75 mm wide DIN rails, as specified in the table below. When mounting the product on DIN rails, keep in mind the following points:

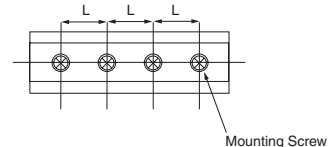
1. Spacing between the products: contributes to a temperature rise and affects the product life. Maintain the minimum spacing as specified in the table below
2. DIN rail mounting holes: To ensure sufficient mechanical strength, the mounting holes should be placed no further apart than those specified in the table below.

Product Category		DIN rail width (mm)	Minimum spacing between contactors (mm) (G)	Distance between mounting screws (mm) (L)
Contactor	Starter			
YS1N-9F	YS2N-9F	35	5	300
YS1N-12F	YS2N-12F	35	5	300
YS1N-20F	YS2N-20F	35	5	300
YS1N-25F	YS2N-25F	35	5	300
YS1N-32F	YS2N-32F	35	5	300
YS1N-38F	YS2N-38F	35	5	300
YS1N-40F	YS2N-40F	75	5	300
YS1N-50F	YS2N-50F	75	5	300
YS1N-65F	YS2N-65F	75	5	300

Minimum Space Between Contactors (mm)

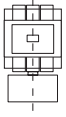




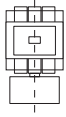






Distance Between Mounting Screws





## Mounting Angle and Operational Characteristics of the YS1N, YS2N, YS1R, YS2R

Contactor / Starter		Coil Frequency (Hz)	Maximum turn-on voltage (V)					Minimum turn-off voltage (V)				
Non-reversing	Reversing											
YS1N/ YS2N	YS1R/ YS2R		Standard/ normal mounting	30° left	30° right	30° tilted forward	30° tilted backwards	Standard/ normal mounting	30° left	30° right	30° tilted forward	30° tilted backwards
-9F	-9F	50 60	114 126	111 123	110 121	118 129	104 120	84 102	82 98	80 95	82 96	78 90
-12F	-12F	50 60	114 126	111 123	110 121	118 129	104 120	84 102	82 98	80 95	82 96	78 90
-20F	-20F	50 60	122 138	120 136	121 138	124 140	115 132	105 119	102 111	99 112	103 118	101 117
-25F	-25F	50 60	122 138	120 136	121 138	124 140	115 132	105 119	102 111	99 112	103 118	101 117
-32F	-32F	50 60	114 132	114 133	112 130	124 145	99 114	78 95	77 93	83 96	81 96	78 91
-38F	-38F	50 60	114 132	114 133	112 130	124 145	99 114	78 95	77 93	83 96	81 96	78 91
-40F	-40F	50 60	114 132	114 133	112 130	124 145	99 114	78 95	77 93	83 96	81 96	78 91
-50F	-50F	50 60	116 138	117 135	116 137	131 149	107 128	91 110	88 108	87 106	86 106	84 105
-65F	-65F	50 60	116 138	117 135	116 137	131 149	107 128	91 110	88 108	87 106	86 106	84 105
-80F	-80F	50 60	132 134	132 134	132 134	137 137	132 134	83 82	83 82	83 82	83 82	83 82
-100F	-100F	50 60	132 134	132 134	132 134	137 137	132 134	83 82	83 82	83 82	83 82	83 82
-125F	-125F	50 60	132 134	132 134	132 134	137 137	132 134	83 82	83 82	83 82	83 82	83 82



Coils with the following rated voltage were used to obtain the above values:

YS1N-9F to-65F: 200V 50Hz, 200-200V 60Hz

YS1N-80F to-125F: 200-220V 50Hz, 200-220V 60Hz

## 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 <sup>2</sup>	0.1-25	5-25	5-25	8-60	8-100	8-100	14-150	14-150
		2 Conductors	mm <sup>2</sup>	1.5-10	5-16	5-16	8-22	8-50	8-50	14-80	14-80
	Solid Wire without Ferrule	1 Conductor	mm <sup>2</sup>	1.5-6	5-25	5-25	-	-	-	-	-
2 Conductors		mm <sup>2</sup>	1.5-6	5-16	5-16	-	-	-	-	-	

### Characteristics of Auxiliary Contacts:

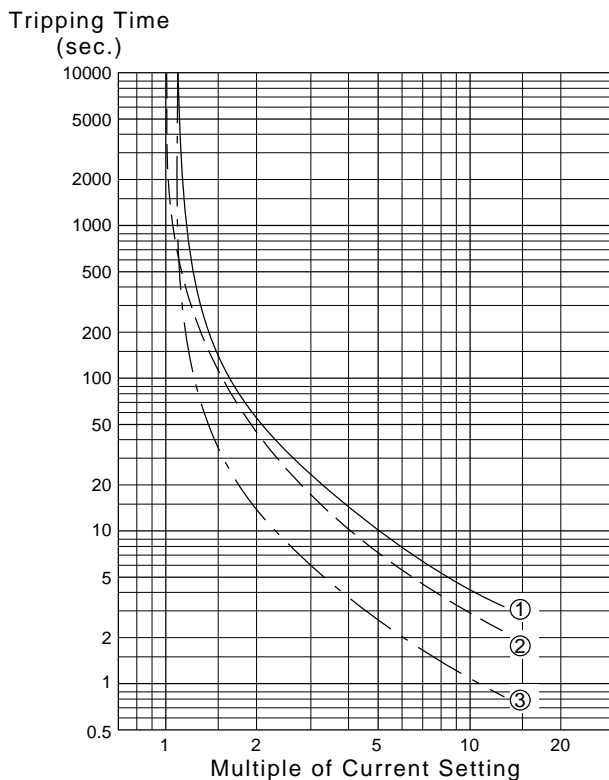
Rated Thermal Current			4 A							
Rated Operational Current per EN 60947-5-1	AC (AC-15)	Rated Voltage	24V AC	48V AC	110V AC	220V AC	380V AC	600V AC		
		Rated Current	4A	4A	3A	2A	1.5A	0.3A		
	DC (DC-13)	Rated Voltage	24V DC	48V DC	110V DC	220V DC				
		Rated Current	1A	0.5A	0.25A	0.1A				
Maximum Cross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

### UL / c-UL Ratings of Auxiliary Contacts:

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

Fig. 4 Tripping Curves

Average operating times, depending on the multiples of the current



- ① Balanced operation, 3-phase, from cold state.
- ② Balanced operation, 2-phase, from cold state.
- ③ Balanced operation, 3-phase, after a long period of set current flow (hot state).

D

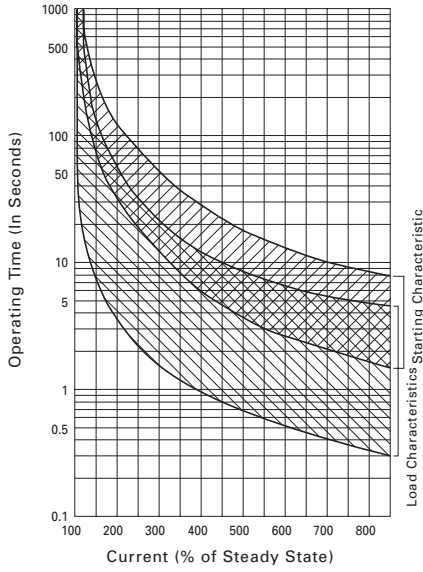
IEC Contactors

### Reset Mode Selection and Setting

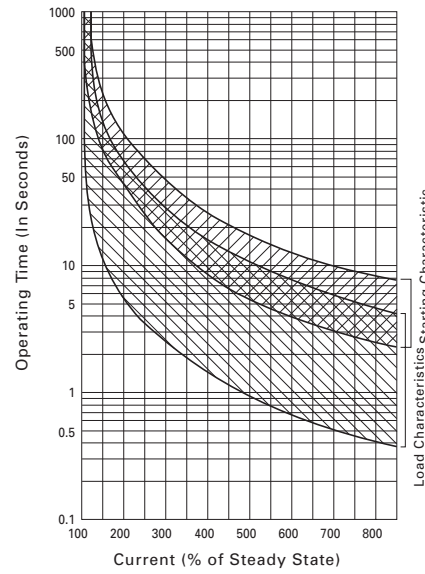
	H	HAND	AUTO	A																								
Function Position																												
Tripping Check	NO	YES	YES	NO																								
Reset	Hand-Reset	Hand-Reset	Auto-Reset	Auto-Reset																								
Contact Condition	<table border="0"> <tr><td>97</td><td>95</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>98</td><td>96</td></tr> </table>	97	95	○	○	○	○	98	96	<table border="0"> <tr><td>97</td><td>95</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>98</td><td>96</td></tr> </table>	97	95	○	○	○	○	98	96	Dotted line indicates the condition when the reset button is depressed.	<table border="0"> <tr><td>97</td><td>95</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>98</td><td>96</td></tr> </table>	97	95	○	○	○	○	98	96
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Setting Method	<p>Insert screwdriver into the select button, turn it clockwise to the "H" position.</p> <p>Select Button (Red) Reset Button (Gray)</p>	<p>The select button is set in "HAND" position, when shipped from factory.</p>	<p>Depress the reset button to below ①, insert screwdriver into the select button, turn counter-clockwise to the "AUTO" position ②</p>	<p>Insert screwdriver into the select button, turn counter-clockwise to the "A" position.</p>																								
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

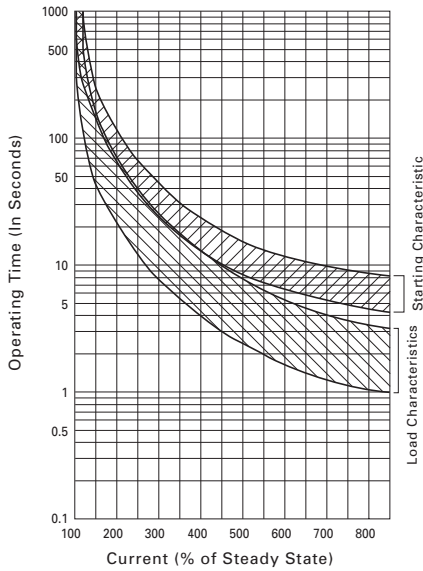
YS1T-RHA38F, YS1T-RHA65F



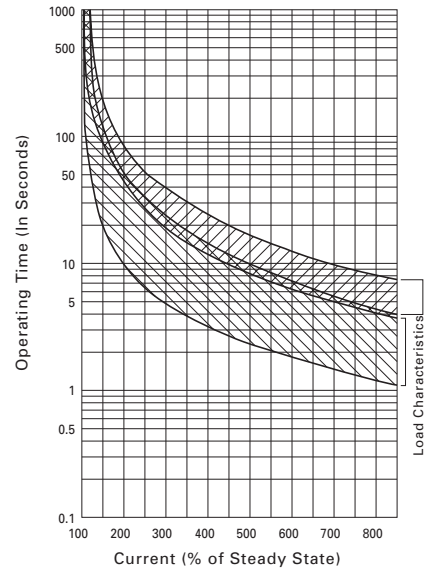
YS1T-RHA25F



YS1T-RHA125F



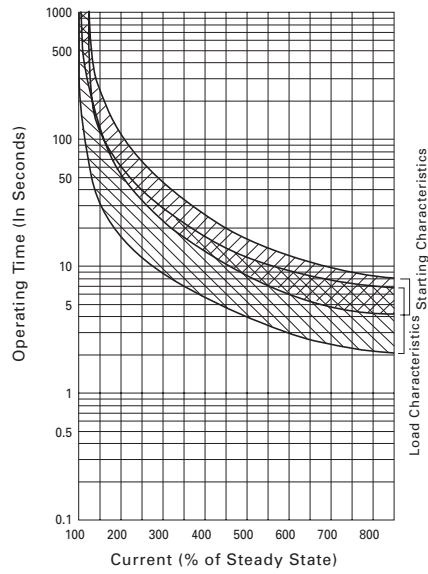
YS1T-RHA150F



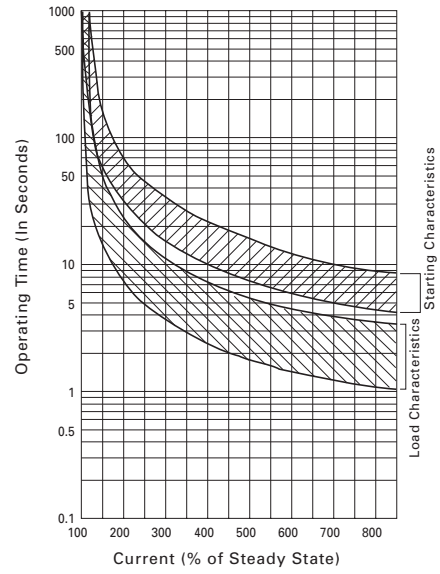
**D**  
**IEC Contactors**

**Operating Time Characteristics of Thermal Overload Relays, continued**

YS1T-RHA180F



YS1T-RHA300F, YS1T-RHA400F



Specifications for Accessories

AC Ratings of Auxiliary Contacts

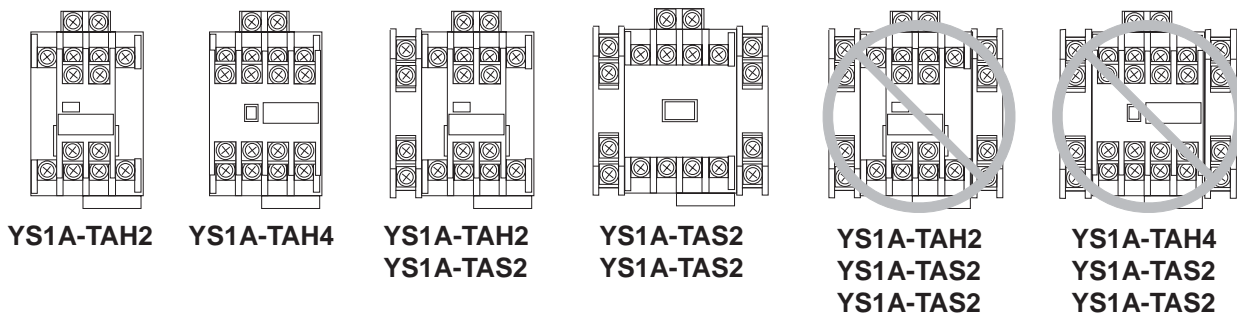
		YS1N-9F to -300F	
<b>AC Ratings per EN AC Ratings (EN-60947-5-1)</b>	Rated Insulation Voltage (V)	660	
	Rated Thermal Current (A)	10	
	Rated Operational Current AC-15 (A)	AC 200-2240V	3
		AC 380-480V	1.5
AC 500-600V		1.2	
<b>UL / c-UL AC Ratings (UL 508)</b>	Rated Insulation Voltage (V)	600	
	Rated Thermal Current (A)	10	
	Rated Operational Current (NEMA A600)	AC 120V	6
		AC 240V	3
		AC 480V	1.5
AC 600V		1.2	

Wire Sizes for Auxiliary Contacts

Minimum-Maximum Wire Size	YS1N-9F to -300F	
<b>Stranded Wire (without ferrule)</b>	1 Conductor	mm <sup>2</sup> (AWG) 1-4 (18-10)
	2 Conductors	mm <sup>2</sup> (AWG) 1-4 (18-10)
<b>Solid Wire (ferrule)</b>	1 Conductor	mm <sup>2</sup> (AWG) 1-4 (18-10)
	2 Conductors	mm <sup>2</sup> (AWG) 1-4 (18-10)

Instructions for Assembling Auxiliary Contact Blocks:

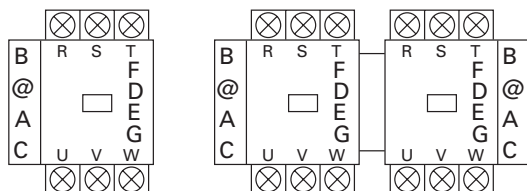
For each magnetic contactor/starter, up to four contacts of the auxiliary contact blocks can be mounted. Two contacts of the top-mount style and two contacts of the side mount style can be combined.



Terminal Numbers and Mounting Examples of Auxiliary Contact Blocks, Side-Mount Style

YS1N-9F to -65F

YS1R-9F to -65F



Note: If you would like to mount two side-mount auxiliary contact blocks (TAS style) to a YS1N non-reversing contactor, mount YS1A-TAS211F.

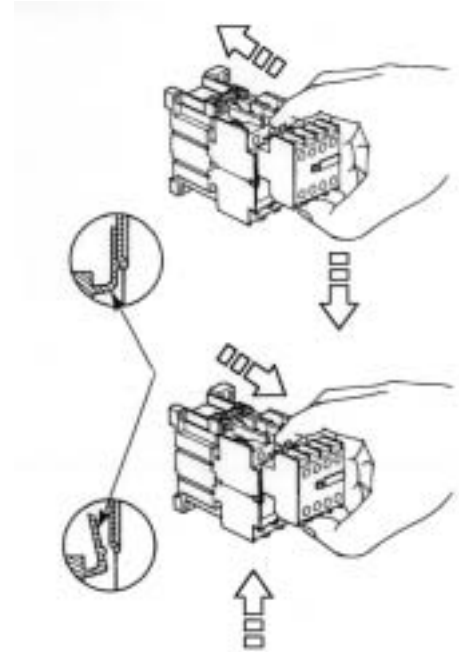
## Mounting and Removing Auxiliary Contact Block on the Contactor

### Top Mount Style

1. Position the contactor and the auxiliary contact block in the same direction.
2. Insert the auxiliary contact block into the area of the top of the contactor. Slide the auxiliary contact until it bottoms (Do not force.) Make sure that the locking hook is locked into position as shown

### Removal Procedure

While lightly lifting the locking hook with your finger, slide the auxiliary contact unit out.



### Side-Mount Style

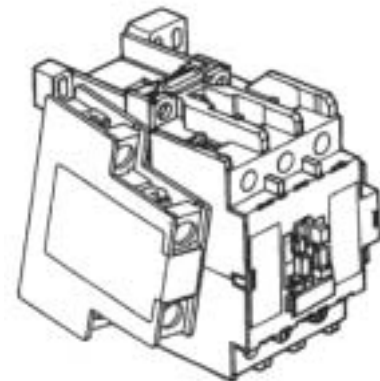
1. Contactor plunger
2. Inside this area, there are locking hooks (upper and lower areas)

### DIN rail Mounting

1. Make sure that the auxiliary contact block (right or left side) and the terminal numbers on the contactor are in the same direction.
2. Push the plunger of the contactor downwards approximately 2mm. While holding the plunger in this manner, insert the white protruding portion of the auxiliary contact block into the square groove of the side of the contactor. Make sure that the locking hook is locked into position.

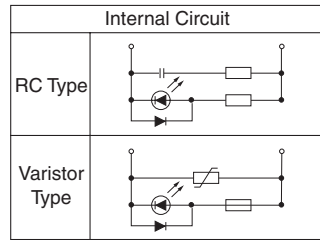
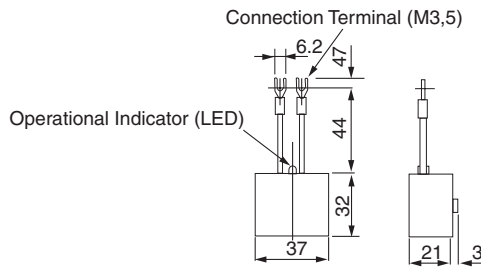
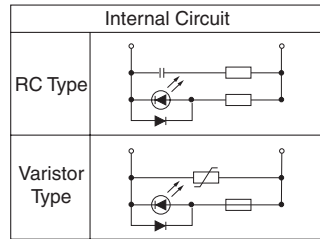
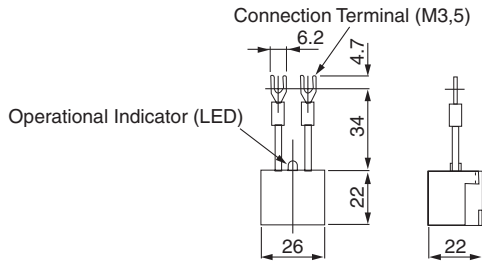
### Removal Procedure

Hold the auxiliary contact block and pull it off.





**Surge Suppressor Module**



**D**

**IEC Contactors**

Contactor Size	Figure Number	Surge Suppressor Module	Dimensions				
			A	B	C	D	E
YS1N-9F	1	YS9Z-TU25	78.5	100	12	76	64
YS1N-12F	1	YS9Z-TU25	78.5	100	12	76	64
YS1N-20F	2	YS9Z-TU25	85	103	12	91	75
YS1N-32F	2	YS9Z-TU65	92	128	12	111	75
YS1N-38F	2	YS9Z-TU65	92	128	12	111	88
YS1N-50F	2	YS9Z-TU65	114	162	12	121	88
YS1N-65F	2	YS9Z-TU65	114	162	12	121	106
YS1N-80F	2	YS9Z-TU65	191	240	12.4	143.5	106

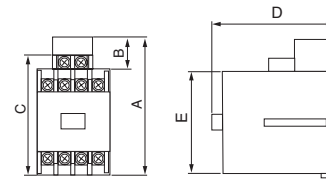


Figure 1

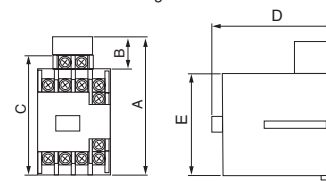


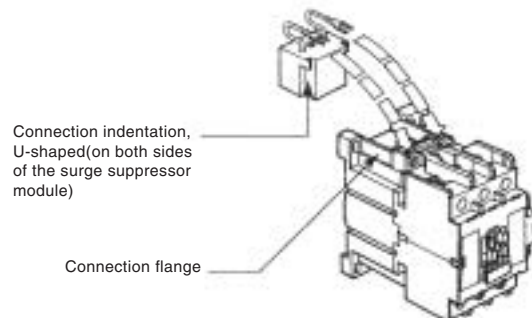
Figure 2

**Mounting Procedure**

1. Line up the surge suppressor module and the contactor as shown in the figure on the right. (Make sure the orientation of the surge suppressor module is such that the LED is visible.)
2. Insert the U-shaped indentations of the surge suppressor module into the connection flange of the contactor as shown in the figure on the right.
3. Loosen the contactor screws, insert the fork lugs of the surge suppressor module, and re-tighten the screw terminals.

**Removal Procedure**

1. Loosen coil screw terminals and remove the fork lugs of the surge suppressor module.
2. Insert a screwdriver between the U-shaped indentation of the surge suppressor module and the connection flange of the contactor, and pry the module off the contactor.

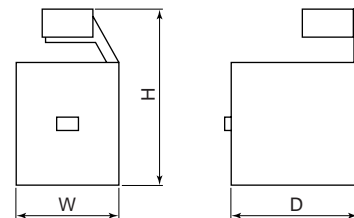


## Specifications of Relay Interface Module

		YS9Z-TCU500UH
Input (coil)	Rated Voltage	24V DC
	Maximum Allowable Voltage	130% of rated voltage
	Power Consumption	0.2W
	Pick-up Voltage (at 20°C)	70% of rated voltage
	Drop-out Voltage (at 20°C)	10% of rated voltage
Output (contact)	Maximum Operational Voltage	380V AC
	Rated Operational Current (at 250V AC)	2A (cosφ=0.4)
	Thermal Current	5A
	Closing Delay	3 ms
	Opening Delay	1 ms
Temperature Range	-20 to +55°C	
Surge Suppressor Device	Maximum Operational Voltage	250V AC
	Function	Resistor capacitor circuit (RC)
	Applicable Control Coil Voltage Range	Up to 240V AC (50/60 Hz)

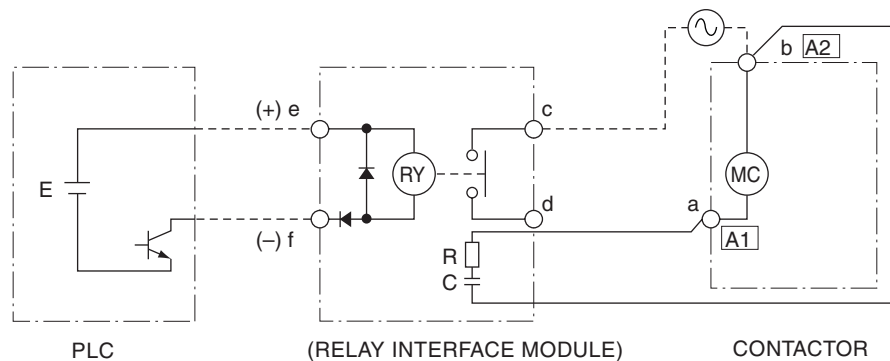
### Relay Interface Completed Part Numbers

Product Series	Applicable Contactor	Completed Part Number	Dimensions		
			W	H	D
Relay Interface Module YS9Z-TCU	YS1N-9F YS1N-12F	YS9Z-TCU500UH12	49	125	76
	YS1N-20F YS1N-25F	YS9Z-TCU500UH25	49	135	91
	YS1N-32F YS1N-38F	YS9Z-TCU500UH38	58	140	111
	YS1N-40F YS1N-50F YS1N-65F	YS9Z-TCU500UH65	75	160	121
	YS1N-80F YS1N-100F YS1N-125F	YS9Z-TCU500UH125	100	187	133
	YS1N-150F YS1N-180F	YS9Z-TCU500UH180	130	225	158
	YS1N-220F YS1N-300F	YS9Z-TCU500UH300	146	260	184



NOTES: Each model is identical in electrical characteristics, mounting plate sizes representing the only difference.

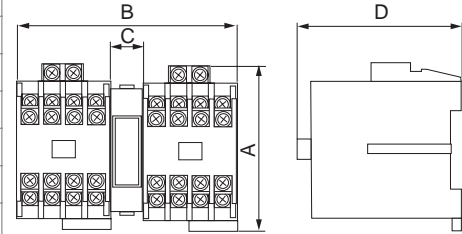
### ■ CONNECTION DIAGRAM AND INTERNAL CIRCUIT OF THE RELAY INTERFACE MODULE



## Mechanical Interlock Blocks

### Reversing Contactors

Contactor Size	Mechanical Interlock Block	Dimensions			
		A	B	C	D
YS1R-9F	YS9Z-TMI65	78.5	100	12	76
YS1R-12F	YS9Z-TMI65	78.5	100	12	76
YS1R-20F	YS9Z-TMI65	85	103	12	91
YS1R-25F	YS9Z-TMI65	85	103	12	91
YS1R-32F	YS9Z-TMI65	92	128	12	111
YS1R-38F	YS9Z-TMI65	92	128	12	111
YS1R-40F	YS9Z-TMI65	92	128	12	111
YS1R-50F	YS9Z-TMI65	114	162	12	121
YS1R-65F	YS9Z-TMI65	114	162	12	121
YS1R-80F	YS9Z-TMI125	191	240	12.4	143.5
YS1R-100F	YS9Z-TMI125	191	240	12.4	143.5
YS1R-125F	YS9Z-TMI125	191	240	12.4	143.5
YS1R-150F	YS9Z-TMI125	239	300	12.4	169.5
YS1R-180F	YS9Z-TMI125	239	300	12.4	169.5
YS1R-220F	YS9Z-TMI125	269	305	12.4	195
YS1R-300F	YS9Z-TMI125	269	305	12.4	195



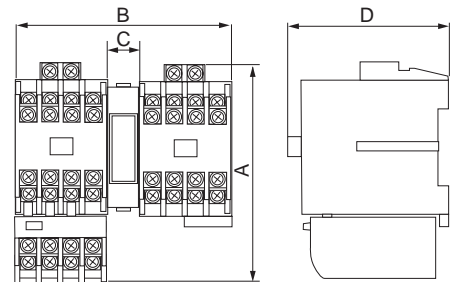
**IEC Contactors**



- Note: 1. The mounting holes are the same as the YS1 Series.  
 2. The above figures are not drawn to scale. Refer to the chart for actual dimensions.  
 3. YS1N-80F~-300F size contactors require an additional mounting base.  
 Refer to the YS1R-80F through -300F in the dimension chart.

### Reversing Starters

Contactor Size	Mechanical Interlock Block	Dimensions			
		A	B	C	D
YS2R-9F	YS9Z-TMI65	78.5	100	12	76
YS2R-12F	YS9Z-TMI65	78.5	100	12	76
YS2R-20F	YS9Z-TMI65	85	103	12	91
YS2R-25F	YS9Z-TMI65	85	103	12	91
YS2R-32F	YS9Z-TMI65	92	128	12	111
YS2R-38F	YS9Z-TMI65	92	128	12	111
YS2R-40F	YS9Z-TMI65	92	128	12	111
YS2R-50F	YS9Z-TMI65	114	162	12	121
YS2R-65F	YS9Z-TMI65	114	162	12	121
YS2R-80F	YS9Z-TMI125	191	240	12.4	143.5
YS2R-100F	YS9Z-TMI125	191	240	12.4	143.5
YS2R-125F	YS9Z-TMI125	191	240	12.4	143.5
YS2R-150F	YS9Z-TMI125	239	300	12.4	169.5
YS2R-180F	YS9Z-TMI125	239	300	12.4	169.5
YS2R-220F	YS9Z-TMI125	269	305	12.4	195
YS2R-300F	YS9Z-TMI125	269	305	12.4	195



- Note: 1. The mounting holes are the same as the YS1 Series.  
 2. The above figures are not drawn to scale. Refer to the chart for actual dimensions.  
 3. YS1N-80F through 300F contactors require an additional mounting base.  
 Refer to the YS2R-80F~-300F in the dimension chart.

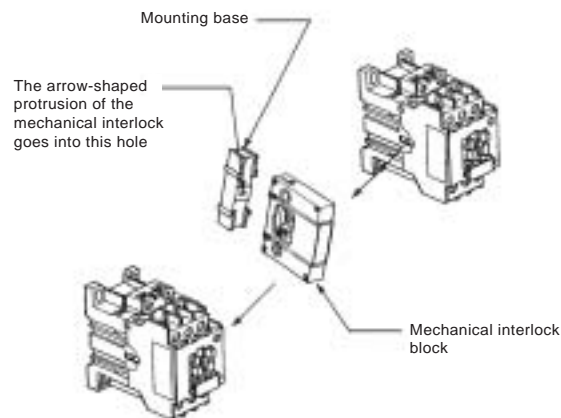
## Mounting and Removing of Mechanical Interlock Block

### Mounting Procedure (YS9Z-TMI65)

1. Position the mechanical interlock block and the contactor in the same direction. (The name plate of the mechanical interlock block should be in the same direction as the name plate of the contactor.)

2. Insert the connection pins of the mechanical interlock block (located on the left and right sides of the mechanical interlock block) into the pin holes of the forward and reverse contactors (the forward contactor in the right and the reverse contactor in the left in the picture). Carefully push the contactors towards the mechanical interlock block to lock the entire assembly together.

3. Insert the mounting base into the bottom of the mechanical interlock block until it bottoms. (Make sure that the arrow-shaped protrusion of the mechanical interlock as far as it will go.)



### Removal Procedure

1. To remove the mechanical interlock block, insert a screwdriver into the space between the mechanical interlock block and the mounting base.
2. Remove the mounting base from the assembly.
3. Gently pull the forward and reverse contactors apart.

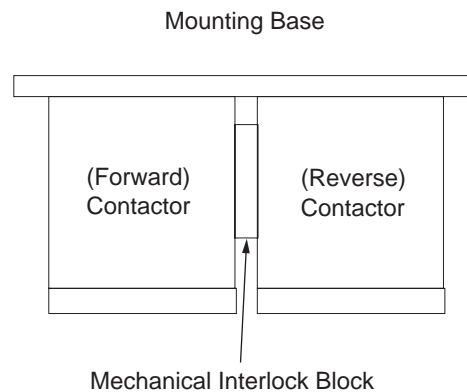
### Mounting Procedure (YS9Z-TMI125)

1. Position the mechanical interlock and the contactor in the same direction. (The name plate of the mechanical interlock should be in the same direction as the name plate of the contactor.)

2. Insert the connection pin of the mechanical interlock into the connection pin hole located on the right side of the forward contactor. The 7-shaped hook of the mechanical interlock reaches the contactor. Position the 7-shaped hook of the mechanical interlock to match the ribbed area of the contactor and press the mechanical interlock block towards the forward contactor.

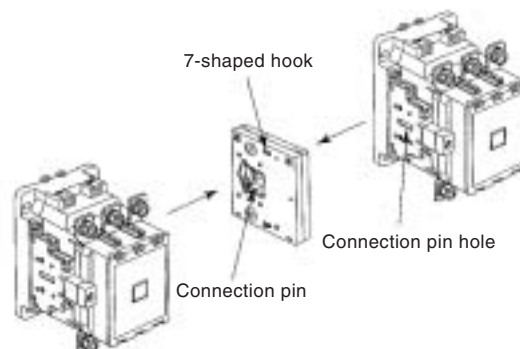
3. For the reverse contactor, follow the same procedure above, but insert the connection pin of the mechanical interlock block into the pin hole located on the left side of the reverse contactor. (Note: The mounting order of the forward or the reverse contactor does not make a difference in the assembly procedure.)

4. After the mechanical interlock block is installed to both contactors, mount the contactors to the mounting base with the screws (4 screws for each contactor, total of 8 screws.) Make sure that the mechanical interlock block is completely locked to the contactors. Please note that there can be operational problems if the mechanical interlock and the contactors are not properly locked into position.



### Removal Procedure

1. Insert a screwdriver into the 7-shaped hook area between either contactor and the mechanical interlock and pry out the mechanical interlock.

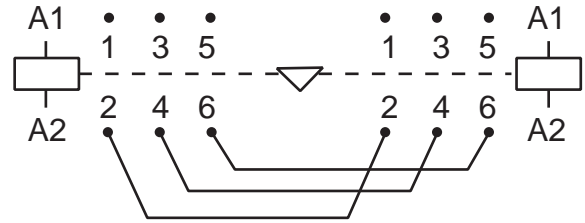
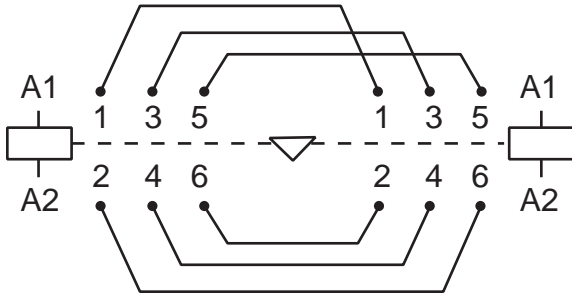


D

IEC Contactors

**Connector Kits for Reversing Contactors and Starters**

Used as connectors on reversing contactors (YS1R series) and reversing starters (YS2R series).



**D Power Wiring Kits for Reversing Contactors**

**IEC Contactors**

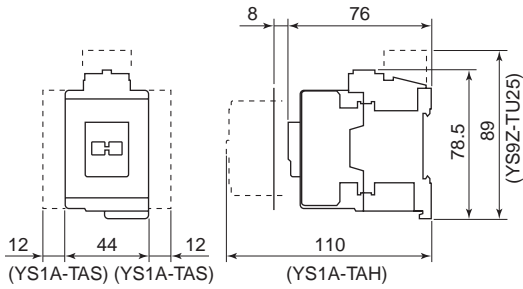
Part Number	Connections	Description	Size	Applicable Reversing Contactors
YS9Z-KIF411344-A	F:L1-R:L1 F:L2-R:L2 F:L3-R:L3 F:T1-R:T3 F:T2-R:T2 F:T3-R:T1	UL1015 Solid Wire	AWG 14	YS1R-9F YS1R-12F
YS9Z-KIF411345-A	F:L1-R:L1 F:L2-R:L2 F:L3-R:L3 F:T1-R:T3 F:T2-R:T2 F:T3-R:T1	UL1015 Stranded Wire	AWG 10	YS1R-20F YS1R-25F
YS9Z-KIF411346-A	F:L1-R:L1 F:L2-R:L2 F:L3-R:L3 F:T1-R:T3 F:T2-R:T2 F:T3-R:T1	UL1283 Stranded Wire	AWG 8	YS1R-32F YS1R-38F
YS9Z-KIF411347-A	F:L1-R:L1 F:L2-R:L2 F:L3-R:L3 F:T1-R:T3 F:T2-R:T2 F:T3-R:T1	Copper Bar Solid Bar	AWG 6	YS1R-40F YS1R-50F YS1R-65F
YS9Z-KIF411348-A	F:L1-R:L1 F:L2-R:L2 F:L3-R:L3 F:T1-R:T3 F:T2-R:T2 F:T3-R:T1	Copper Bar Solid Bar	1.6 X11	YS1R-80F YS1R-100F YS1R-125F
YS9Z-KIF411388-A	F:L1-R:L1 F:L2-R:L2 F:L3-R:L3 F:T1-R:T3 F:T2-R:T2 F:T3-R:T1	Copper Bar Solid Bar	3 X16	YS1R-150F
YS9Z-KIF411388-B	F:L1-R:L1 F:L2-R:L2 F:L3-R:L3 F:T1-R:T3 F:T2-R:T2 F:T3-R:T1	Copper Bar Solid Bar	3 X20	YS1R-180F
YS9Z-KIF411590-A	F:L1-R:L1 F:L2-R:L2 F:L3-R:L3 F:T1-R:T3 F:T2-R:T2 F:T3-R:T1	Copper Bar Solid Bar	3.5X25	YS1R-220F YS1R-300F

## Non-Reversing AC Contactors

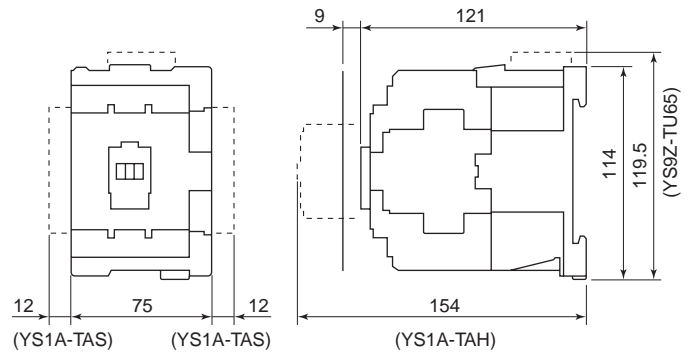
All Dimensions in mm.

### ■ Non-Reversing Contactors

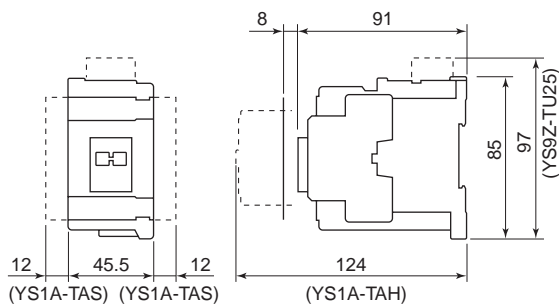
- YS1N-9F, YS1N-12F



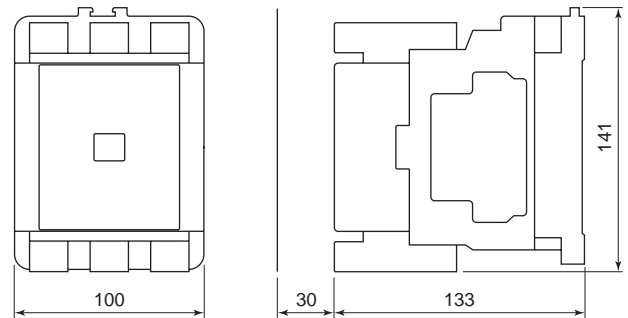
- YS1N-40F, YS1N-50F, YS1N-65F



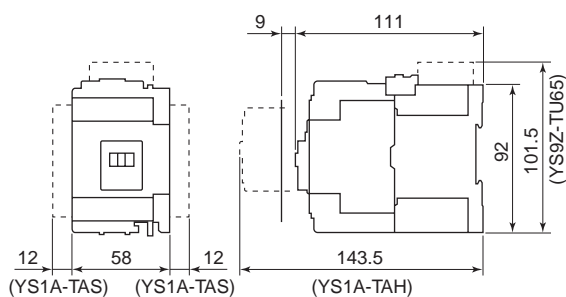
- YS1N-20F, YS1N-25F



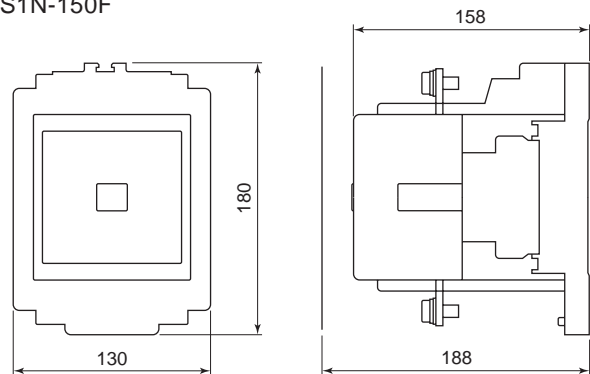
- YS1N-80F, YS1N-100F, YS1N-125F



- YS1N-32F, YS1N-38F



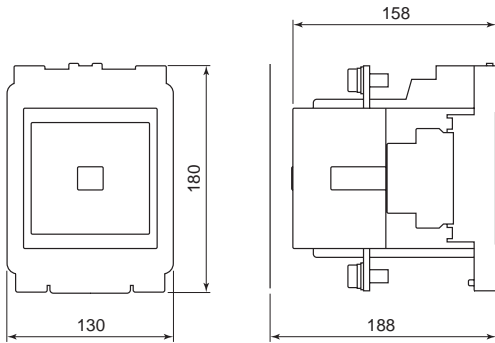
- YS1N-150F



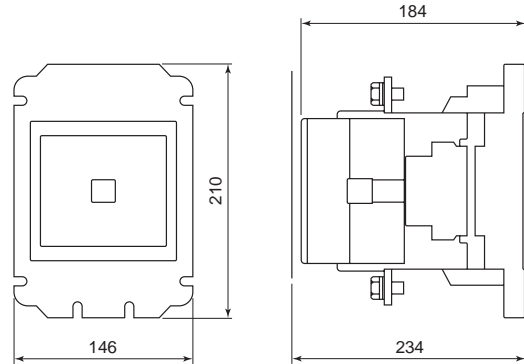
D IEC Contactors

■ Non-Reversing Contactors

- YS1N-180F



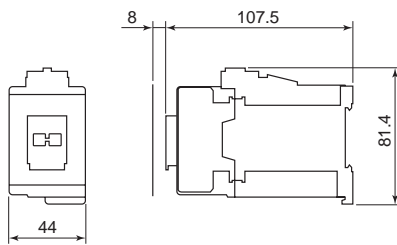
- YS1N-220F, YS1N-300F



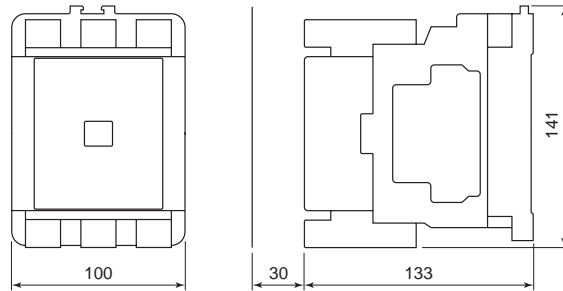
**D**  
**IEC Contactors**

**Non-Reversing DC Contactors**

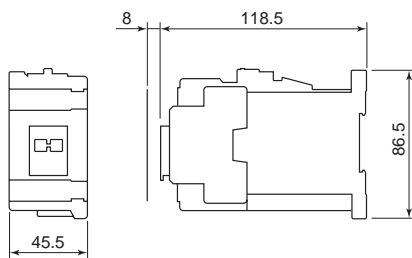
- YS3N-9FG2, YS3N-12FG2



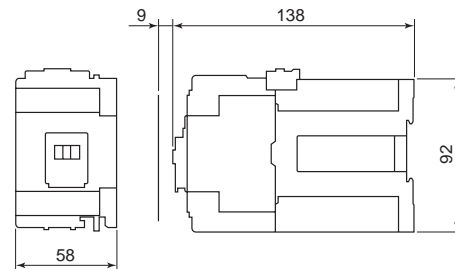
- YS3N-80FG, YS3N-100FG, YS3N-125FG



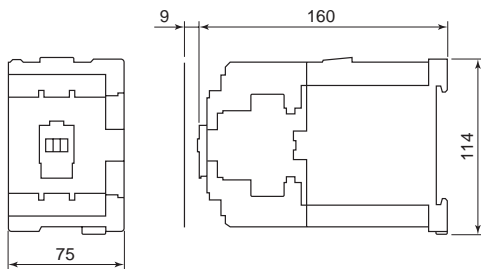
- YS3N-20FG2, YS3N-25FG2



- YS3N-32FG2, YS3N-38FG2



- YS3N-40FG2, YS3N-50FG2, YS3N-65FG2

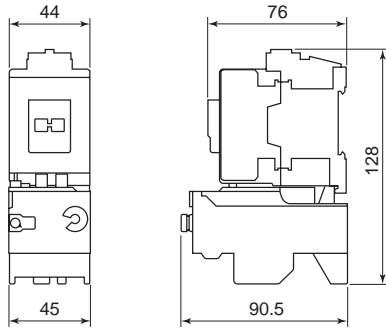




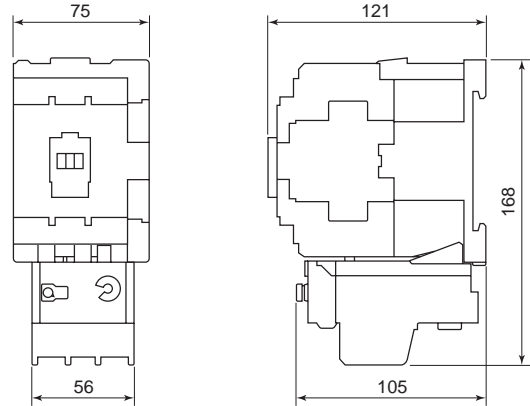
## Non-Reversing AC Starters

### ■ Non-Reversing Starters

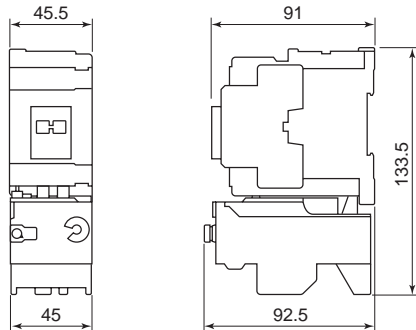
- YS2N-9F, YS2N-12F



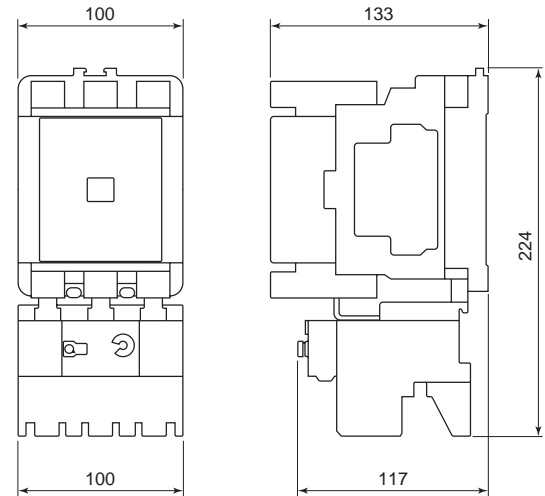
- YS2N-40F, YS2N-50F, YS2N-65F



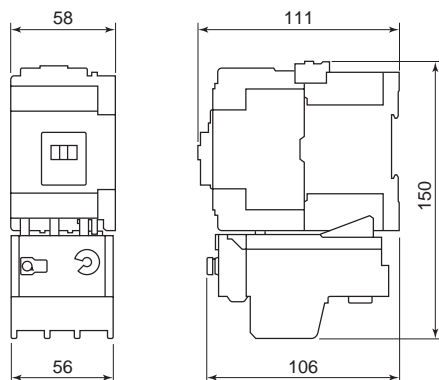
- YS2N-20F, YS2N-25F



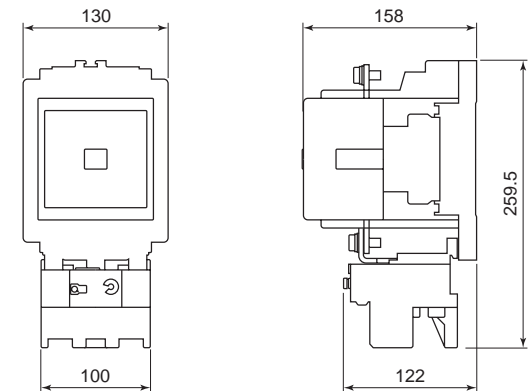
- YS2N-80F, YS2N-100F, YS2N-125F



- YS2N-32F, YS2N-38F

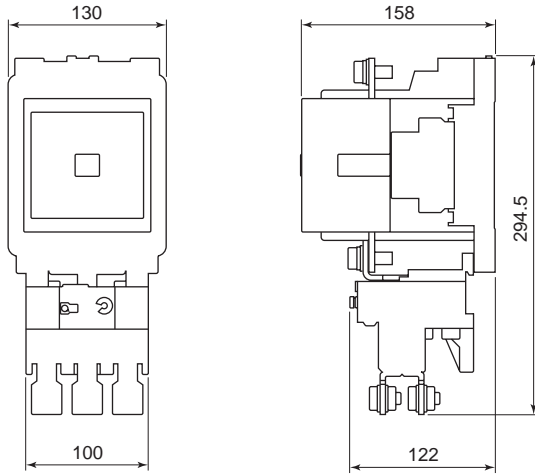


- YS2N-150F

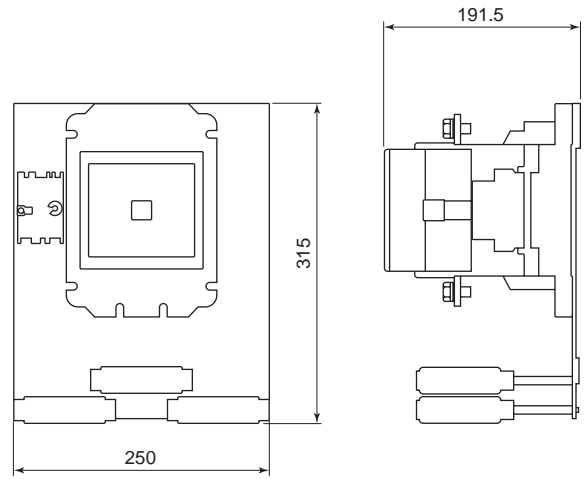


■ Non-Reversing Starters

● YS2N-180F



● YS2N-220F, YS2N-300F

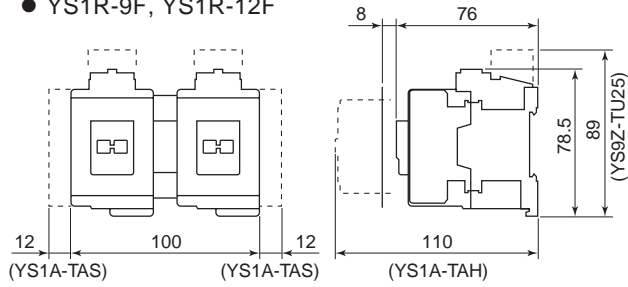


**D**  
**IEC Contactors**

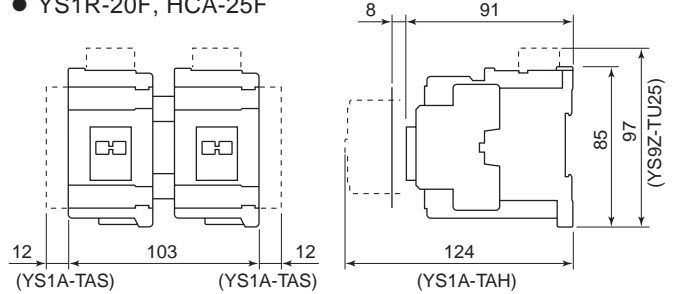
## Reversing AC Contactors

### ■ Reversing Contactors

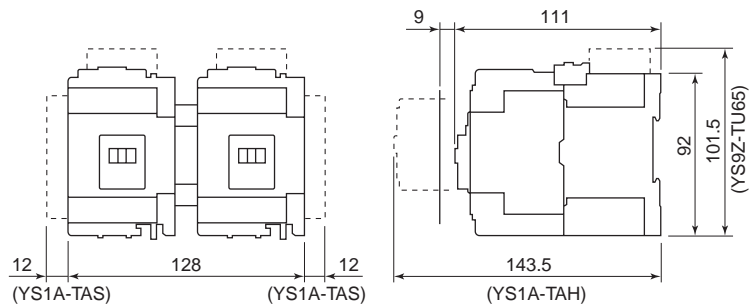
#### ● YS1R-9F, YS1R-12F



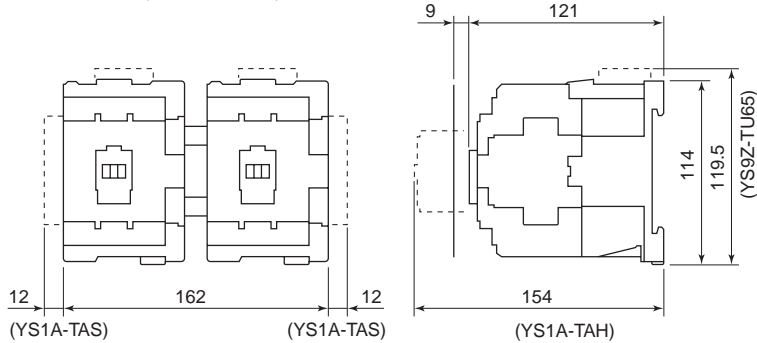
#### ● YS1R-20F, HCA-25F



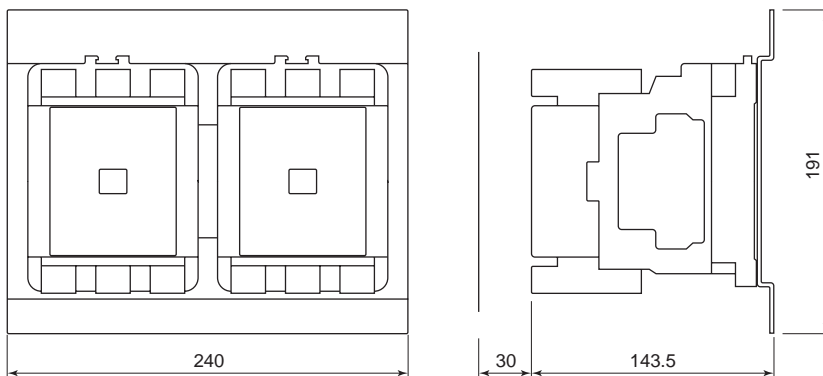
#### ● YS1R-32F, YS1R-38F



#### ● YS1R-40F, YS1R-50F, YS1R-65F

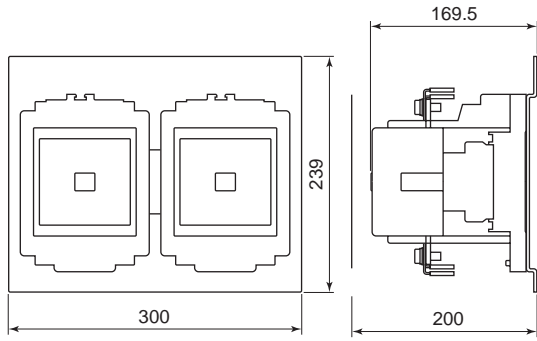


#### ● YS1R-80F, YS1R-100F, YS1R-125F

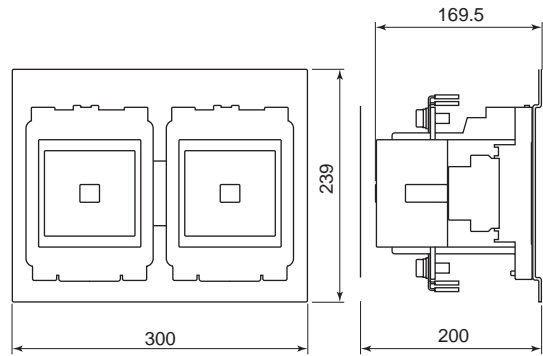


■ Reversing Contactors

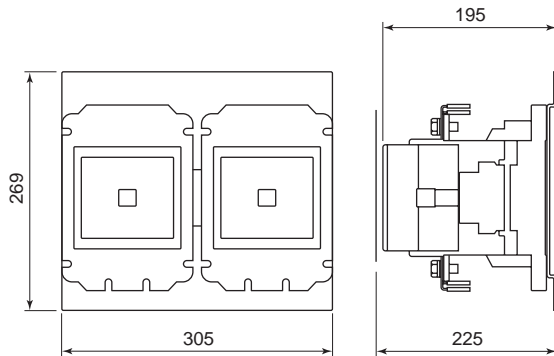
● YS1R-150F



● YS1R-180F



● YS1R-220F, YS1R-300F

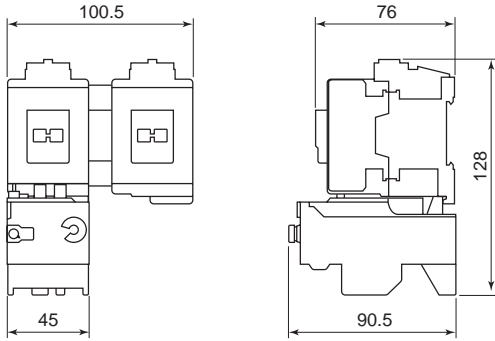


**D**  
**IEC Contactors**

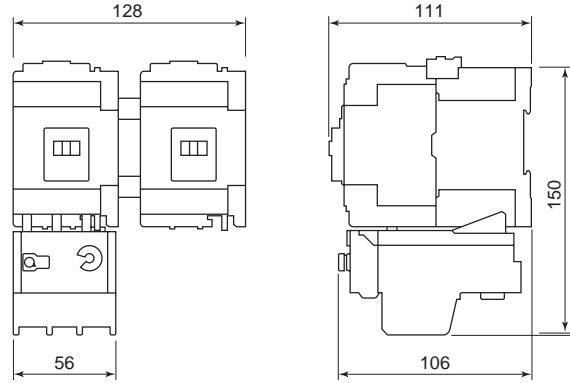
## Reversing AC Starters

### ■ Reversing Starters

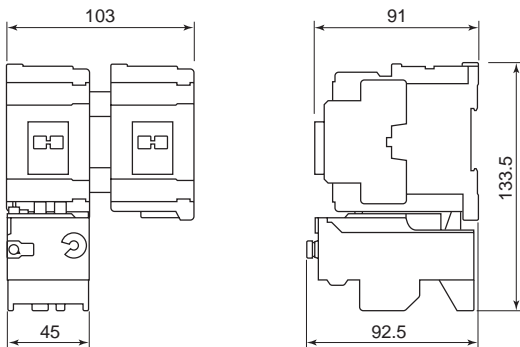
- YS2R-9F, YS2R-12F



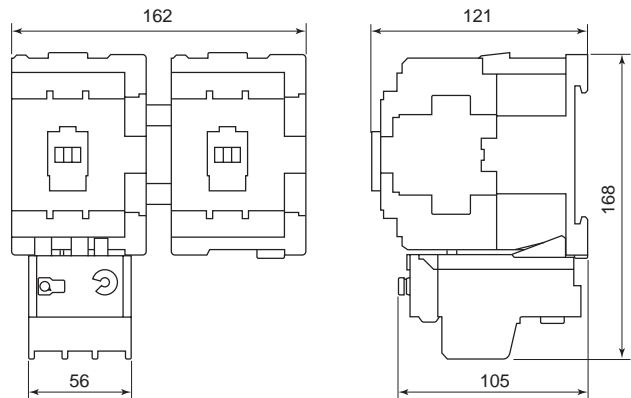
- YS2R-32F, YS2R-38F



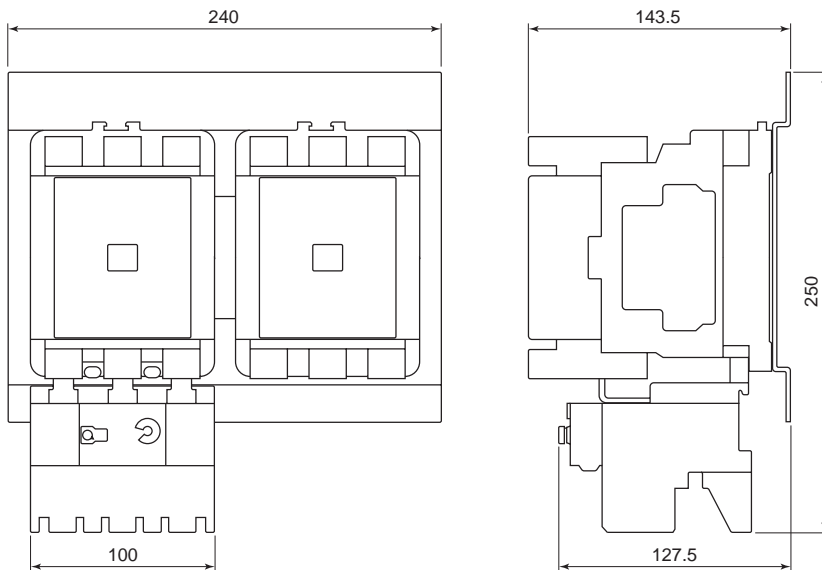
- YS2R-20F, YS2R-25F



- YS2R-40F, YS2R-50F, YS2R-65F

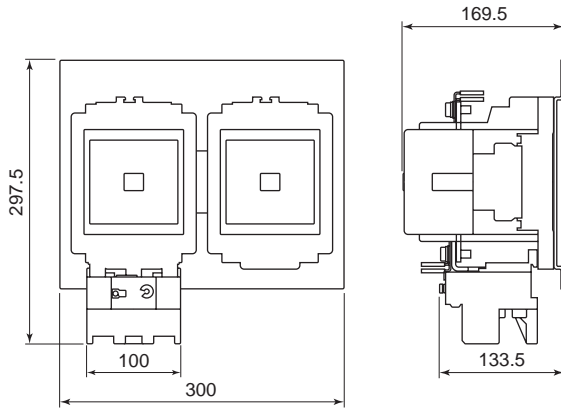


- YS2R-80F, YS2R-100F, YS2R-125F

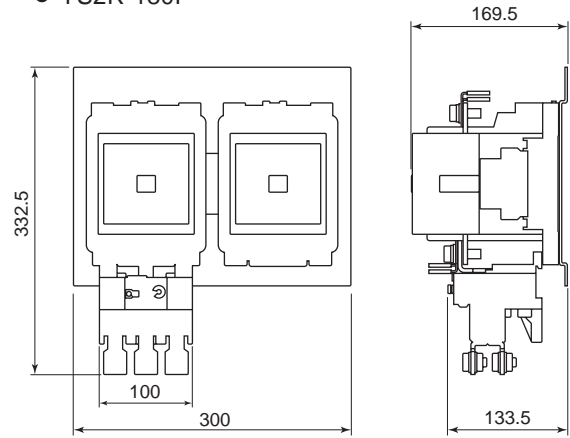


■ Reversing Starters

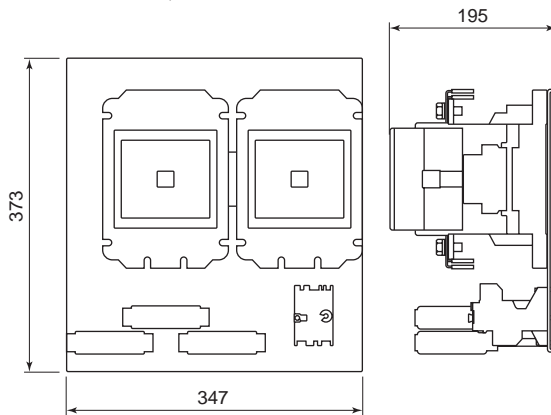
● YS2R-150F



● YS2R-180F



● YS2R-220F, YS2R-300F



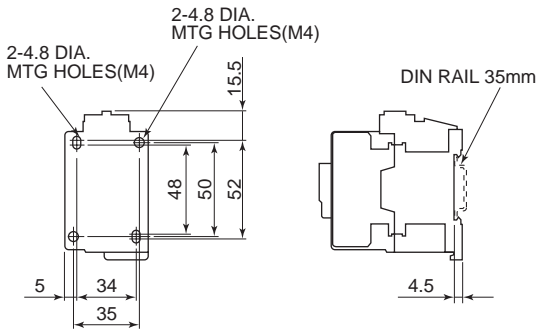
**D**  
**IEC Contactors**

## Non-Reversing AC Contactors

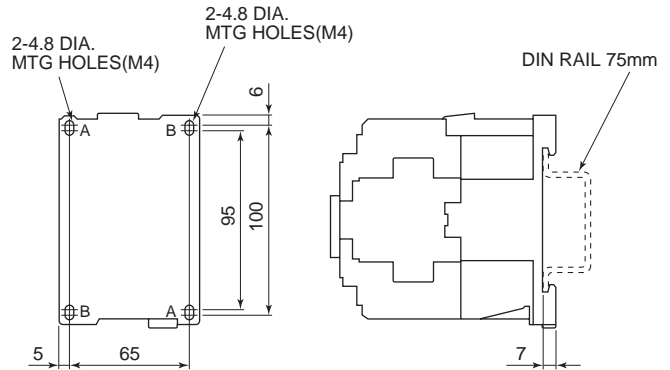
### Mounting, Screw Mounting, and Rail Mounting

#### ■ Non-Reversing Contactors

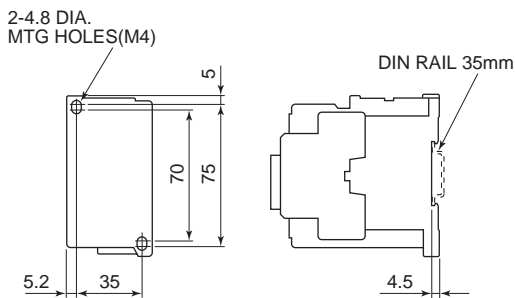
- YS1N, YS1N-12F



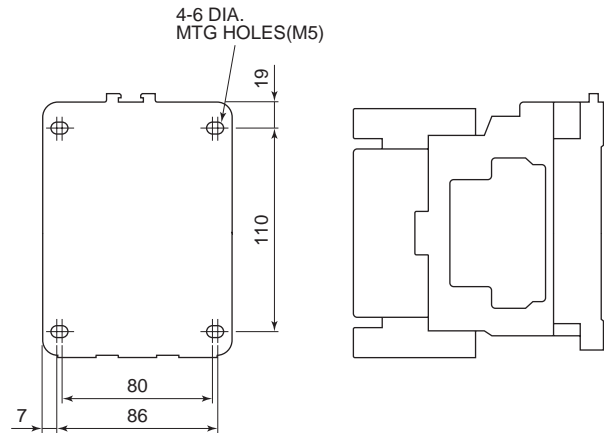
- YS1N-40F, YS1N-50F, YS1N-65F



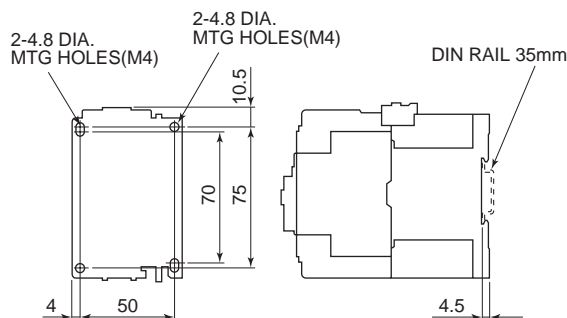
- YS1N-20F, YS1N-25F



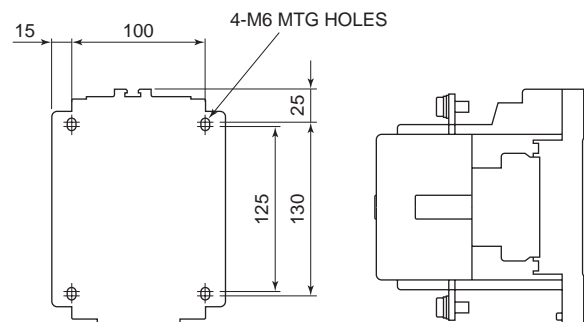
- YS1N-80F, YS1N-100F, YS1N-125F



- YS1N-32F, YS1N-38F



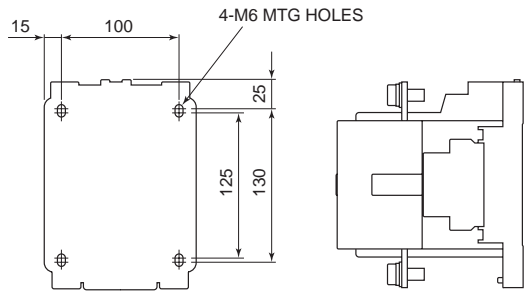
- YS1N-150F



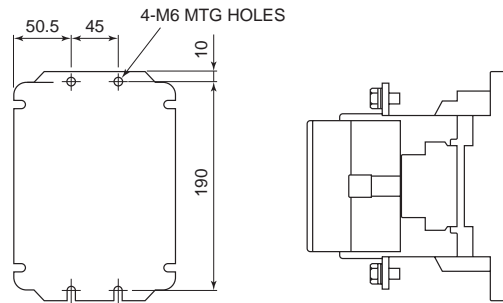
**Mounting, Screw Mounting, and Rail Mounting, continued**

■ Non-Reversing Contactors

● YS1N-180F



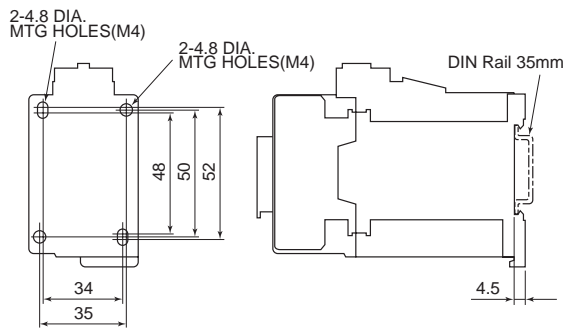
● YS1N-220F, YS1N-300F



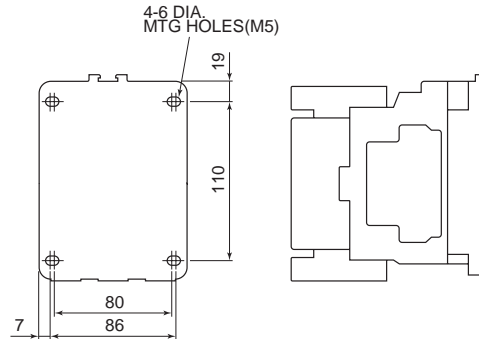
**IEC Contactors**

**Non-Reversing DC Contactors**

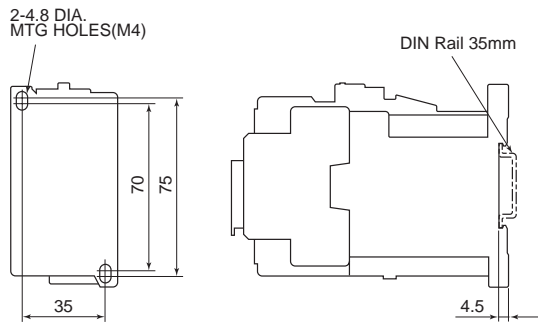
● YS3N-9FG2, -12FG2



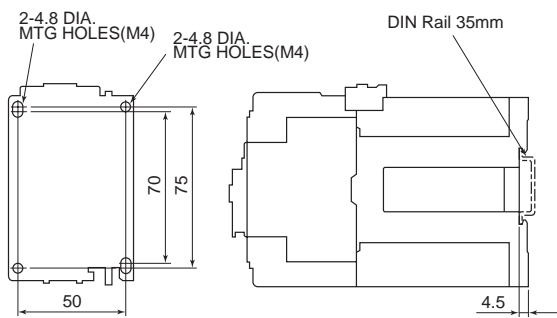
● YS3N-80FG, YS3N-100FG, YS3N-125FG



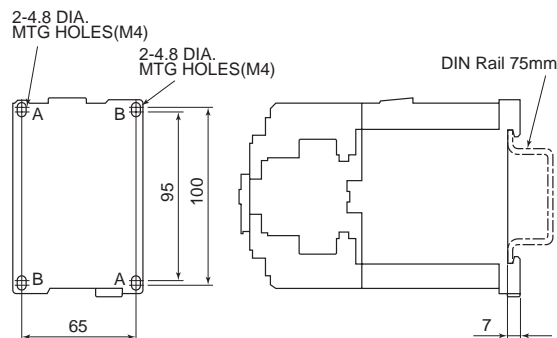
● YS3N-20FG2, YS3N-25FG2



● YS3N-32FG2, YS3N-38FG2



● YS3N-40FG2, YS3N-50FG2, YS3N-65FG2



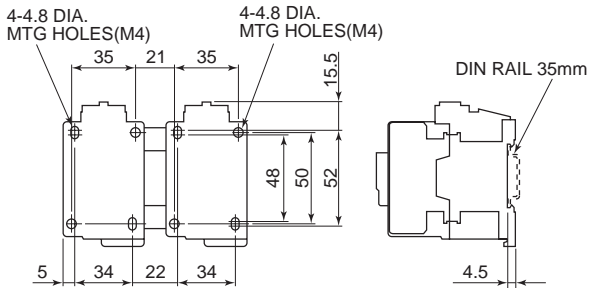


## Reversing AC Contactors

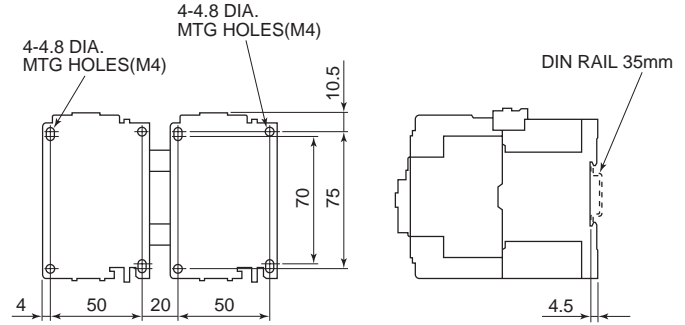
### Mounting, Screw Mounting, and Rail Mounting

#### ■ Reversing Contactors

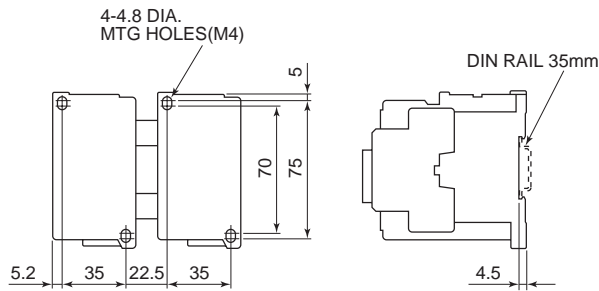
##### ● YS1R-9F, YS1R-12F



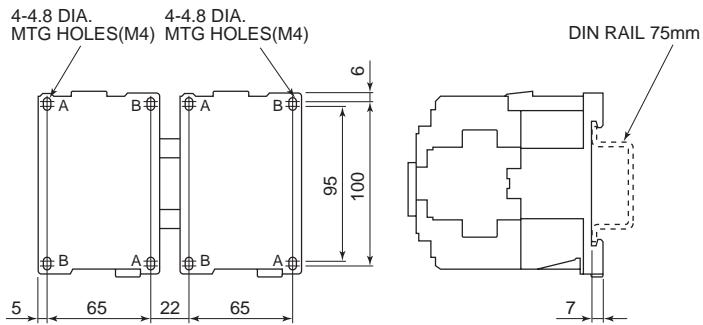
##### ● YS1R-32F, YS1R-38F



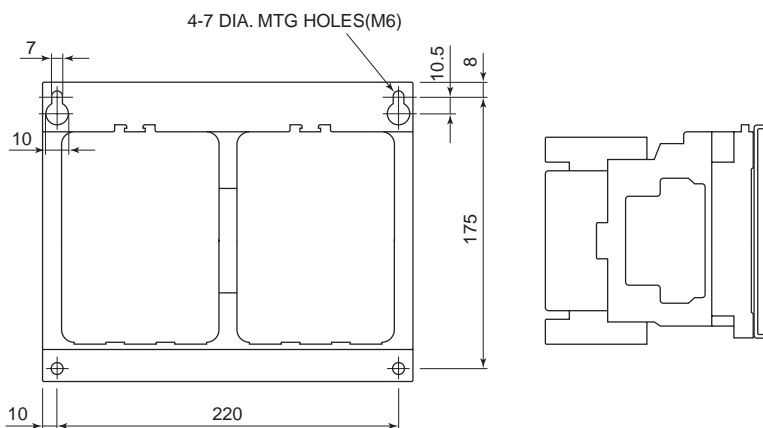
##### ● YS1R-20F, YS1R-25F



##### ● YS1R-40F, YS1R-50F, YS1R-65F



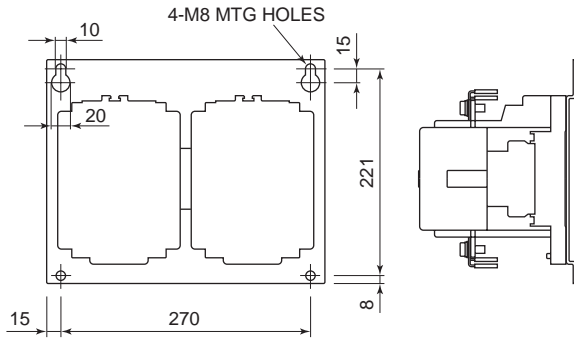
##### ● YS1R-80F, YS1R-100F, YS1R-125F



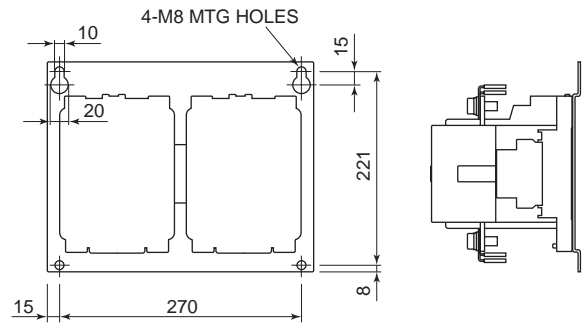
**Mounting, Screw Mounting, and Rail Mounting, continued**

■ Reversing Contactors

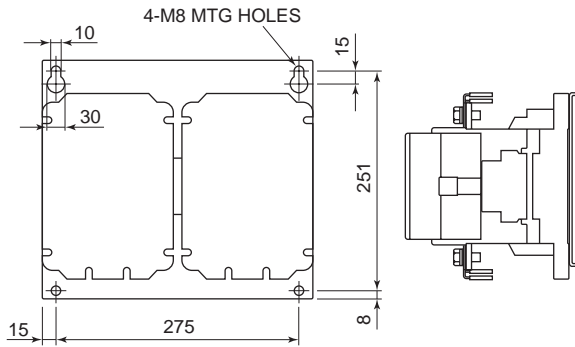
● YS1R-150F



● YS1R-180F



● YS1R-220F, YS1R-300F



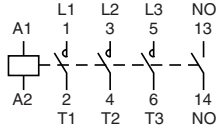
**D**  
**IEC Contactors**

## Non-Reversing and Reversing Contactors

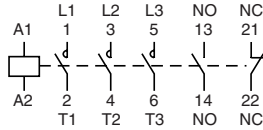
### Wiring Diagrams

#### ■ Non-Reversing Contactors

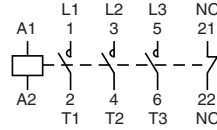
- YS1N-9F, YS1N-12F (1NO)



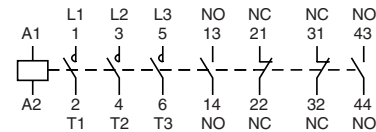
- YS1N-20F, YS1N-25F, YS1N-32F, YS1N-38F  
YS1N-40F, YS1N-50F, YS1N-65F



- YS1N-9F, YS1N-12F (1NC)

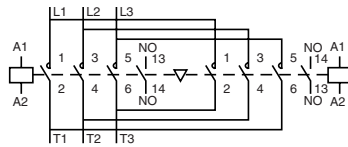


- YS1N-80F, YS1N-100F, YS1N-125F, YS1N-150F, YS1N-180F  
YS1N-220F, YS1N-300F

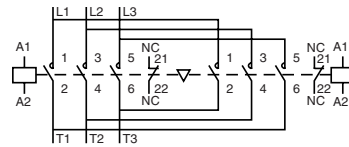


#### ■ Reversing Contactors

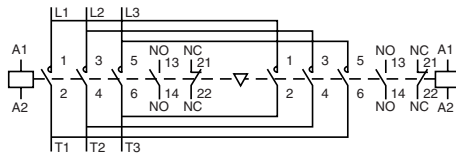
- YS1R-9F, YS1R-12F (1NOX2)



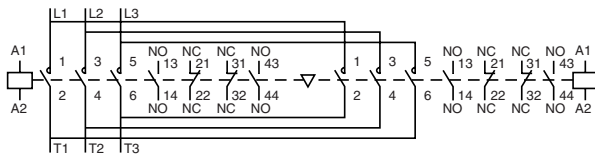
- YS1R-9F, YS1R-12F (1NCX2)



- YS1R-20F, YS1R-25F, YS1R-32F, YS1R-38F, YS1R-40F, YS1R-50F, YS1R-65F

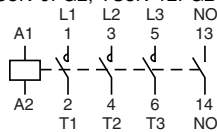


- YS1R-80F, YS1R-100F, YS1R-125F, YS1R-150F, YS1R-180F, YS1R-220F, YS1R-300F

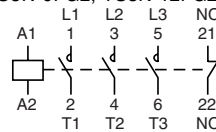


#### ■ Non-Reversing Contactors DC Operated

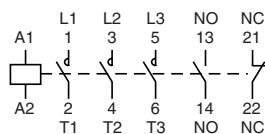
- YS3N-9FG2, YS3N-12FG2 (1NO)



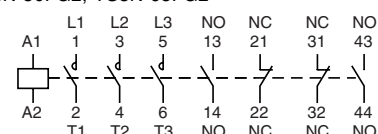
- YS3N-9FG2, YS3N-12FG2 (1NC)



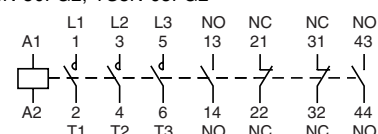
- YS3N-20FG2, YS3N-25FG2, YS3N-32G2F



- YS3N-38FG2, YS3N-40FG2, YS3N-50FG2, YS3N-65FG2



- YS3N-80FG, YS3N-100FG, YS3N-125FG

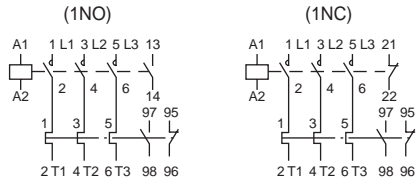


**Non-Reversing and Reversing Starters**

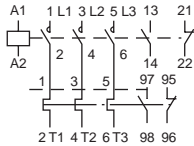
**Wiring Diagrams**

■ **Non-Reversing Starters**

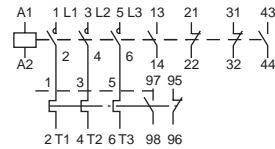
- YS2N-9FD, YS2N-12FD



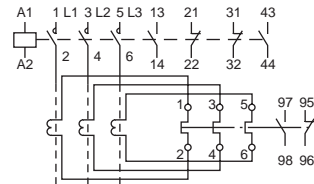
- YS2N-20FD, YS2N-25FD, YS2N-32FD, YS2N-38FD, YS2N-40FD, YS2N-50FD, YS2N-65FD



- YS2N-80FD, YS2N-100FD, YS2N-125FD, YS2N-150FD, YS2N-180FD

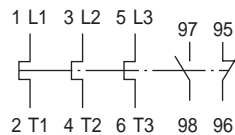


- YS2N-220FD, YS2N-300FD



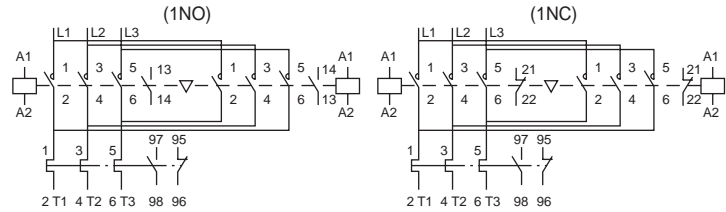
■ **Thermal Overload Relays**

- YS1T-RHA□F□D

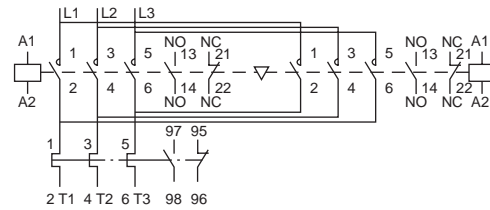


■ **Reversing Starters**

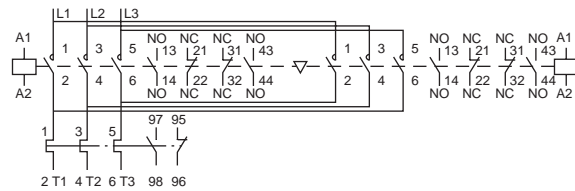
- YS2R-9FD, YS2R-12FD



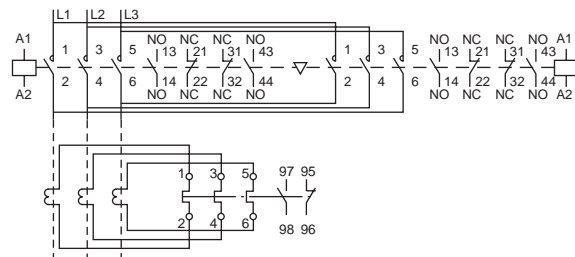
- YS2R-20FD, YS2R-25FD, YS2R-32FD, YS2R-38FD, YS2R-40FD, YS2R-50FD, YS2R-65FD



- YS2R-80FD, YS2R-100FD, YS2R-125FD, YS2R-150FD, YS2R-180FD



- YS2R-220FD, YS2R-300FD



D

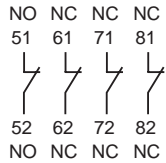
IEC Contactors

## Auxiliary Contact Blocks

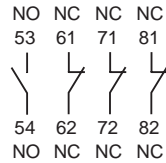
### Wiring Diagrams

#### ■ Auxiliary Contact Blocks

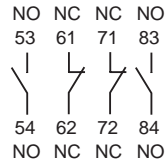
- YS1A-TAH404F  
4NC



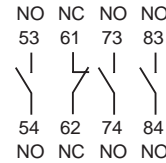
- YS1A-TAH413F  
1NO+3NC



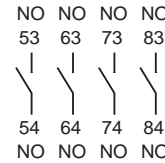
- YS1A-TAH422F  
2NO+2NC



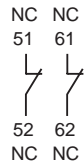
- YS1A-TAH431F  
3NO+1NC



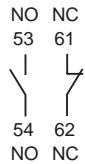
- YS1A-TAH440F  
4NO



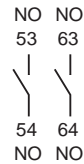
- YS1A-TAH202F  
2NC



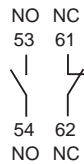
- YS1A-TAH211F  
1NO+1NC



- YS1A-TAH220F  
2NO



- YS1A-TAS211F  
1NO+1NC



## Appendix

## STANDARDIZED UTILIZATION CATEGORIES [Excerpt from EN60947]

## ■ Class of AC Magnetic Contactors

## Contactors

Typical applications for AC switching	Category	Conditions of making and breaking corresponding to normal operation (dura-						Conditions of making and breaking corresponding to occasional operation					
		Making			Breaking			Making			Breaking		
		I	U	cos $\theta$	I	U	cos $\theta$	I	U	cos $\theta$	I	U	cos $\theta$
Resistive, non-inductive or slightly inductive	AC1	1e	Ue	0.95	1e	Ue	0.95	1.51e	1.05Ue	0.8	1.51e	1.05Ue	0.8
Slip-ring motors Starting, switching	AC2	2.51e	Ue	0.65	2.51e	Ue	0.65	41e	1.05Ue	0.65	41e	1.05Ue	0.65
Squirrel cage motors Starting, switching off	AC3	61e	Ue	(1)	1e	0.17Ue	(1)	101e	1.05Ue	(2)	81e	1.05Ue	(2)
Squirrel cage motors Starting, plugging inching (jogging)	AC4	61e	Ue	(1)	61e	Ue	(1)	121e	1.05Ue	(2)	101e	1.05Ue	(2)

Notes : (1)  $\cos \theta = 0.65$  for  $I_e \leq 17A$   $\cos \theta = 0.35$  for  $I_e > 17A$   
 (2)  $\cos \theta = 0.45$  for  $I_e \leq 100A$   $\cos \theta = 0.35$  for  $I_e > 100A$

## ■ Class of Auxiliary Contacts

## Auxiliary Contacts

Typical applications for AC switching	Category	Conditions of making and breaking corresponding to normal operation (dura-						Conditions of making and breaking corresponding to occasional operation					
		Making			Breaking			Making			Breaking		
		I	U	cos $\theta$	I	U	cos $\theta$	I	U	cos $\theta$	I	U	cos $\theta$
Control of electromagnets < 72 VA sealed > 72 VA sealed	AC14	61e	Ue	0.3	1e	Ue	0.3	61e	1.1Ue	0.7	61e	1.1Ue	0.7
	AC15	101e	Ue	0.3	1e	Ue	0.3	101e	1.1Ue	0.3	101e	1.1Ue	0.3

**Application Tables**
**AC 1 Ratings:**
**(International Applications)**
**Non-inductive or slightly inductive loads, resistance furnaces:**

Power Ratings of Three-Phase Motors (50/60Hz)						Maximum Operational Current AC1	Instantaneous Auxiliary Contacts		Completed Part Number
Category AC1 (Star Connection)							$\theta < 55^{\circ}\text{C}$	NO	
220V 230V	380V 400V	415V	440V	500V	660V 690V	A			
7.5	13	14	15	17	23	20	0	1	YS1N-9F01 ****
7.5	13	14	15	17	23	20	1	0	YS1N-9F10 ****
7.5	13	14	15	17	23	20	0	1	YS1N-12F01 ****
7.5	13	14	15	17	23	20	1	0	YS1N-12F10 ****
11	20	21	23	26	34	30	1	1	YS1N-20F11 ****
11	20	21	23	26	34	30	1	1	YS1N-25F11 ****
19	32	35	38	43	57	50	1	1	YS1N-32F11 ****
23	40	43	45	52	68	60	1	1	YS1N-38F11 ****
23	40	43	45	52	68	60	1	1	YS1N-40F11 ****
30	52	57	61	69	91	80	1	1	YS1N-50F11 ****
30	52	57	61	69	91	80	1	1	YS1N-65F11 ****
51	88	97	102	116	154	135	2	2	YS1N-80F22 ****
57	98	107	114	129	171	150	2	2	YS1N-100F22 ****
57	98	107	114	129	171	150	2	2	YS1N-125F22 ****
76	132	144	152	173	229	200	2	2	YS1N-150F22 ****
91	158	173	183	208	274	240	2	2	YS1N-180F22 ****
99	171	187	198	225	297	260	2	2	YS1N-220F22 ****
133	230	252	267	303	400	350	2	2	YS1N-300F22 ****

**AC2 Ratings: Slip-ring motors; starting, switching off running motors**

**(International Applications)**

**AC4 Ratings: Squirrel-cage motors; starting, plugging, inching**

Power Ratings of Three-Phase Motors (50/60Hz)						Instantaneous Auxiliary Contacts		Completed Part Number
Category AC2 or AC4						NO	NC	
220V 230V	380V 400V	415V	440V	500V	660V 690V			
kW	kW	kW	kW	kW	kW			
2.2	4	4	4	5.5	5.5	0	1	YS1N-9F01 * * * *
2.2	4	4	4	5.5	5.5	1	0	YS1N-9F10 * * * *
3	5.5	5.5	5.5	5.5	7.5	0	1	YS1N-12F01 * * * *
3	5.5	5.5	5.5	5.5	7.5	1	0	YS1N-12F10 * * * *
4	7.5	9	9	9	9	1	1	YS1N-20F11 * * * *
5.5	9	9	9	10	10	1	1	YS1N-25F11 * * * *
7.5	11	11	11	15	15	1	1	YS1N-32F11 * * * *
11	15	15	15	15	18.5	1	1	YS1N-38F11 * * * *
11	15	15	15	15	18.5	1	1	YS1N-40F11 * * * *
15	18.5	18.5	22	22	22	1	1	YS1N-50F11 * * * *
18.5	22	22	30	25	25	1	1	YS1N-65F11 * * * *
22	30	33	33	37	33	2	2	YS1N-80F22 * * * *
30	45	45	45	45	45	2	2	YS1N-100F22 * * * *
37	51	51	51	51	51	2	2	YS1N-125F22 * * * *
45	63	63	63	63	63	2	2	YS1N-150F22 * * * *
55	80	80	80	80	75	2	2	YS1N-180F22 * * * *
65	90	90	90	90	90	2	2	YS1N-220F22 * * * *
90	129	129	129	110	140	2	2	YS1N-300F22 * * * *



**AC3 Ratings:**
**(International Applications)**
**Squirrel-cage motors—starting & switching off running motors:**

Power Ratings for Three - Phase Motors 50/60Hz Category AC3 —for ambient air temperature around contactor 55° C						Maximum Operational Current	Instantaneous Auxiliary Contacts		Completed Part Number
220V 230V	380V 400V	415V	440V	500V	660V 690V	AC3 Duty 380-440V	NO	NC	
kW/HP	kW/HP	kW/HP	kW/HP	kW/HP	kW/HP	A			
2.2/3	4/5.5	4/5.5	4/5.5	5.5/7.5	5.5/7.5	8.5	0	1	YS1N-9F01 * * * *
2.2/3	4/5.5	4/5.5	4/5.5	5.5/7.5	5.5/7.5	8.5	1	0	YS1N-9F10 * * * *
3/4	5.5/7.5	5.5/7.5	5.5/7.5	7.5/10	7.5/10	11.5	0	1	YS1N-12F01 * * * *
3/4	5.5/7.5	5.5/7.5	5.5/7.5	7.5/10	7.5/10	11.5	1	0	YS1N-12F10 * * * *
4/5.5	7.5/10	9/12	9/12	10/13.5	10/13.5	15.5	1	1	YS1N-20F11 * * * *
5.5/7.5	11/15	11/15	11/15	15/20	15/20	22	1	1	YS1N-25F11 * * * *
7.5/10	15/20	15/20	15/20	18.5/25	18.5/25	30	1	1	YS1N-32F11 * * * *
11/15	18.5/25	22/30	22/30	22/30	30/40	37	1	1	YS1N-38F11 * * * *
11/15	18.5/25	22/30	22/30	22/30	30/40	37	1	1	YS1N-40F11 * * * *
15/20	22/30	25/35	30/40	30/40	33/44	44	1	1	YS1N-50F11 * * * *
18.5/25	30/40	37/50	37/50	37/50	37/50	60	1	1	YS1N-65F11 * * * *
22/30	45/54	45/60	45/60	55/75	45/60	85	2	2	YS1N-80F22 * * * *
30/40	55/75	55/75	60/80	65/87	65/87	105	2	2	YS1N-100F22 * * * *
37/50	60/80	63/85	63/85	75/100	75/100	114	2	2	YS1N-125F22 * * * *
45/60	75/100	80/110	80/110	90/125	100/136	138	2	2	YS1N-150F22 * * * *
55/75	95/130	100/136	110/150	110/150	110/150	179	2	2	YS1N-180F22 * * * *
65/87	110/150	110/150	110/150	132/180	132/180	205	2	2	YS1N-220F22 * * * *
90/125	160/220	160/220	160/220	160/220	200/270	300	2	2	YS1N-300F22 * * * *

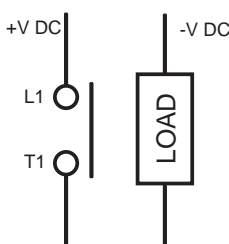
**D**
**IEC Contactors**

**DC Loads:**

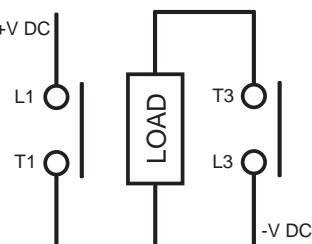
DC1, DC14 L/R=1ms Resistance Load (A)			DC2, DC4 L/R=15ms DC Motor Load (A)			DC11 L/R=100ms Inductive Load (A)			No. of Series Connection	Part No.
48V	110V	220V	48V	110V	220V	48V	110V	220V		
12	10	1	3	1.5	0.25	1	0.7	0.8	1	YS1N-9F##****
12	10	6	6	4	1.2	5	3	0.6	2	
12	12	12	40	8	4	8	4	1.5	3	
13	10	1	3	1.5	0.25	1	0.7	0.2	1	YS1N-12F##****
13	10	6	6	4	1.2	5	3	0.6	2	
13	13	13	13	8	4	8	4	1.5	3	
13	10	1	3	2	0.25	1	0.7	0.25	1	YS1N-20F11****
13	10	6	6	4	1.2	5	3	0.6	2	
13	13	13	13	8	4	8	4	1.5	3	
15	12	1.5	8	2	0.4	3	1.2	0.3	1	YS1N-25F11****
20	15	10	15	8	2	12	5	1.2	2	
20	20	15	20	15	8	15	10	2	3	
26	15	2	10	3	0.4	3	1.2	0.4	1	YS1N-32F11****
26	26	15	20	10	3	20	5	1.5	2	
26	26	26	25	20	10	20	15	2	3	
30	15	2	10	3	0.4	5	1.5	0.4	1	YS1N-38F11****
30	30	20	30	15	3	20	5	1.5	2	
35	35	30	35	20	10	25	15	2	3	
30	15	2	10	3	0.4	5	1.5	0.4	1	YS1N-40F11****
30	30	20	30	15	3	20	5	1.5	2	
35	35	30	35	20	10	25	15	2	3	
30	15	2	15	3	0.4	5	1.5	0.4	1	YS1N-50F11****
50	35	20	35	15	3	20	5	1.5	2	
50	50	35	40	20	10	25	15	2	3	
50	30	2	20	4	0.4	5	1.5	0.4	1	YS1N-65F11****
65	50	20	40	25	3	20	5	1.5	2	
65	65	50	50	30	20	25	15	2	3	
65	35	3	30	4	0.5	—	—	—	1	YS1N-80F11****
80	65	30	65	40	4	—	—	—	2	
80	80	65	65	65	30	—	—	—	3	
80	35	3	30	4	0.5	—	—	—	1	YS1N-100F11****
93	80	40	80	50	4	—	—	—	2	
93	93	80	80	65	40	—	—	—	3	
80	35	3	30	4	0.5	—	—	—	1	YS1N-125F11****
100	100	50	85	50	4	—	—	—	2	
125	125	100	100	65	50	—	—	—	3	
125	35	4	50	5	0.5	—	—	—	1	YS1N-150F11****
125	100	65	125	80	5	—	—	—	2	
150	150	125	150	100	65	—	—	—	3	
125	35	4	50	5	0.5	—	—	—	1	YS1N-180F11****
150	125	80	125	80	5	—	—	—	2	
180	180	150	180	100	80	—	—	—	3	

**IEC Contactors**

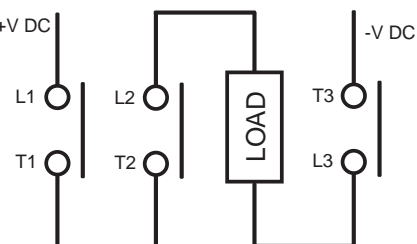
1 Series Connection



2 Series Connection



3 Series Connection



## Application to Star (Wye)-Delta Motor Starters

3-Phase Motor Power Rating				Type of Magnetic Contactors			Type of Overload Relay
Voltage (V) Frequency (Hz)	Capacity		Current	Main	Star	Delta	Part Number
	(kW)	(HP)	(A)				
200-240V  50/60 Hz	3.7	5	17.5	YS-9F	YS-9F	YS-9F	RHA-25F/15DP
	5.5	7.5	26	YS-9F	YS-9F	YS-9F	RHA-25F/21DP
	7.5	10	34	YS-9F	YS-9F	YS-20F	RHA-65F/25D + TIB-65F
	11	15	48	YS-20F	YS-9F	YS-25F	RHA-65F/43D + TIB-65F
	15	20	65	YS-32F	YS-20F	YS-32F	RHA-65F/56D + TIB-65F
	18.5	25	79	YS-32F	YS-20F	YS-38F	RHA-125F/68DP
	22	30	93	YS-32F	YS-32F	YS-50F	RHA-125F/80DP
	30	40	125	YS-50F	YS-32F	YS-65F	RHA-125F/105DP
	37	50	148	YS-50F	YS-32F	YS-80F	RHA-150F/135DP
	45	60	180	YS-80F	YS-50F	YS-100F	RHA-180F/155DP
	55	75	220	YS-125F	YS-50	YS-100F	RHA-300F/180D (with CT)
	75	100	300	YS-180F	YS-80F	YS-150F	RHA-400F/240D (with CT)
	90	125	360	YS-220F	YS-80F	YS-180F	RHA-500F/300D (with CT)
	110	150	440	YS-300F	YS-80F	YS-220F	RHA-500F/300D (with CT)
	132	175	528	YS-300F	YS-80F	YS-300F	RHA-750F/450D (with CT)
	160	215	640	YS-400F	YS-150F	YS-300F	RHA-750F/450D (with CT)
380-440V  50/60 Hz	3.7	5	8.7	YS-9F	YS-9F	YS-9F	RHA-25F/8.5DP
	5.5	7.5	13	YS-9F	YS-9F	YS-9F	RHA-25F/11DP
	7.5	10	17	YS-9F	YS-9F	YS-9F	RHA-25F/15DP
	11	15	24	YS-9F	YS-9F	YS-12F	RHA-25F/21DP
	15	20	32.5	YS-20F	YS-9F	YS-20F	RHA-65F/32D + TIB-65F
	18.5	25	39.5	YS-20F	YS-9F	YS-25F	RHA-65F/35D + TIB-65F
	22	30	46.5	YS-20F	YS-20F	YS-25F	RHA-65F/43D + TIB-65F
	30	40	62.5	YS-32F	YS-20F	YS-38F	RHA-65F/56D + TIB-65F
	37	50	74	YS-32F	YS-20F	YS-38F	RHA-125F/68DP
	45	60	90	YS-32F	YS-32F	YS-50F	RHA-125F/80DP
	55	75	110	YS-50F	YS-32F	YS-50F	RHA-125F/105DP
	75	100	150	YS-80F	YS-32F	YS-80F	RHA-150F/135DP
	90	125	180	YS-80F	YS-50F	YS-100F	RHA-180F/155DP
	110	150	220	YS-80F	YS-50F	YS-125F	RHA-300F/180D (with CT)
	132	175	264	YS-80F	YS-50F	YS-150F	RHA-400F/240D (with CT)
	160	215	320	YS-150F	YS-80F	YS-180F	RHA-400F/240D (with CT)
200	267	400	YS-150F	YS-80F	YS-220F	RHA-500F/300D (with CT)	
250	333	500	YS-220F	YS-80F	YS-300F	RHA-500F/450D (with CT)	
300	—	600	YS-220F	YS-150F	YS-400F	RHA-500F/450D (with CT)	

1. Regarding Star operation time is as follows: In case of small inertia (e.g. Non-load, MG set, fan, compressor) is less than 30 seconds. The limit for number of continuity starting is 3 times, more than need off time.
2. The term of electrical endurance is more than 0.5 million operations.

## Application to Transformers

Contactor Type	Single Phase (2-Poles series connection)				Three Phase			
	(kVA)	(A)	(kVA)	(A)	(kVA)	(A)	(kVA)	(A)
YS1N-9F	1.5	7.5	2	5	3	7.5	4	5
YS1N-12F	2	9	3	7	3.5	9	5	7
YS1N-20F	2.5	10	4	9.5	5	13	7.5	9.5
YS1N-25F	4	17	7.5	16	6.5	17	12	16
YS1N-32F	5	25	10	24	10	25	18	24
YS1N-38F	7	32	10	24	12	32	25	62
YS1N-40F	7	32	10	24	12	32	25	32
YS1N-50F	9	40	18	40	15	40	30	40
YS1N-65F	10	46	20	45	18	46	35	45
YS1N-80F	15	62	35	55	35	62	42	55
YS1N-100F	17	75	33	75	30	75	42	55
YS1N-125F	20	90	33	75	35	90	60	75
YS1N-150F	25	110	40	90	42	110	70	90
YS1N-180F	25	110	50	110	42	110	85	110
YS1N-220F	25	110	57	130	42	110	100	130
YS1N-300F	33	150	57	130	57	150	100	130

1. At the moment when transformer connected with the supply source, large transient inrush current will flow, and its value is much larger than the normal current (about 20 times greater). The duration may be a few cycles.

## Application to Lamp Loads

## Tungsten Lamp

Contactor	100V								200V							
	100W 1A	150W 1.5A	200W 2A	250W 2.5A	300W 3A	500W 5A	1000W 10A	1500W 15A	100W 0.5A	150W 0.75A	200W 1A	250W 1.25A	300W 1.5A	500W 2.5A	1000W 5A	1500W 7.5A
YS1N-9F	11	7	5	4	3	2	1	—	22	14	11	8	6	4	2	1
YS1N-12F	13	8	6	5	4	2	1	—	28	18	14	10	8	5	2	1
YS1N-20F	13	8	6	5	4	3	1	1	30	20	15	12	10	6	2	2
YS1N-25F	19	12	9	7	6	3	1	1	40	26	20	16	13	8	4	2
YS1N-32F	26	17	13	10	8	5	2	1	50	33	26	20	16	10	5	3
YS1N-38F	35	23	17	14	11	7	3	2	70	46	35	28	23	14	7	4
YS1N-40F	35	23	17	14	11	7	3	2	70	46	35	28	23	14	7	4
YS1N-50F	50	33	25	20	16	10	5	3	100	66	50	40	33	20	10	6
YS1N-65F	65	42	32	26	21	13	6	4	130	86	65	52	43	26	13	8

1. When tungsten lamp is lit, its inrush current is about 30 times the normal current and the duration is about 10 milliseconds. In general application to tungsten lamp load, magnetic contactors should be selected so that the rated operational current of the contactor will be no less than two times the normal current of tungsten lamp load, considered its making current capacity.

2. The value of above table shows available quantities as connected in parallel.

## Fluorescent Lamp (rapid start time)

Contactor	100V							200V							
	40W		60W	80W	100W		220W	40W		60W	80W	100W		220W	
	1 0.59A (1.2A)	2 0.96A (1.1A)	1 0.92A	1 1.17A	1 1.55A	2 2.5A	1 2.7A	1 0.29A (0.6A)	2 0.48A (0.55A)	1 0.46A	1 0.58A	1 0.78A	2 1.3A	1 1.35A	2 2.5A
YS1N-9F	18 (9)	11 (10)	11	9	5	4	4	37 (18)	22 (20)	23	18	14	8	8	4
YS1N-12F	23 (11)	14 (12)	15	11	9	5	5	48 (23)	29 (25)	30	24	17	10	10	5
YS1N-20F	25 (12)	15 (13)	16	12	9	6	5	51 (25)	31 (27)	32	25	19	11	11	6
YS1N-25F	33 (16)	20 (18)	21	17	12	8	7	68 (33)	41 (36)	43	34	25	15	14	8
YS1N-32F	42 (20)	26 (22)	27	21	16	1	9	86 (41)	52 (45)	54	43	32	20	18	10
YS1N-38F	59 (29)	36 (31)	38	29	22	14	12	120 (58)	72 (63)	76	60	44	26	25	14
YS1N-40F	59 (29)	36 (31)	38	29	22	14	12	120 (58)	72 (63)	76	60	44	26	25	14
YS1N-50F	84 (41)	52 (45)	54	42	32	20	18	172 (83)	104 (90)	108	86	64	38	37	20
YS1N-65F	100 (54)	67 (59)	70	55	41	26	24	224 (108)	135 (118)	141	112	83	50	48	26

- When fluorescent lamp lights, generally the starting current is a few times the normal current and its duration may be within a few seconds. Magnetic contactors should be selected so the rated operation current will be the same as the total load current of the fluorescent lamp loads.
- The values of above table show available quantities as connected in parallel.
- ( ) values in above table show in the case of the light for Low power factor type.

## Mercury Lamp

Contactor	100V (low power factor type/high power factor type)								200V (low power factor type/high power factor type)							
	40W	100W	200W	250W	300W	400W	700W	1000W	40W	100W	200W	250W	300W	400W	700W	1000W
	1.25A/ 0.55A	2.6A/ 1.4A	4.6A/ 2.6A	5.1A/ 3.0A	6.0A/ 3.7A	8.0A/ 4.9A	14.5A/ 8.5A	21A/ 12A	0.53A/ —	1.0A/ 0.65A	1.9A/ 1.2A	2.1A/ 1.5A	2.5A/ 1.8A	3.3A/ 2.3A	5.9A/ 4.1A	8.3A/ 5.8A
YS1N-9F	8/20	4/7	2/4	2/3	1/2	1/2	-/1	-/-	20/-	11/16	5/9	5/7	4/6	3/4	1/2	1/1
YS1N-12F	11/25	5/10	3/5	2/4	2/3	1/2	-/1	-/1	26/-	14/21	7/11	6/9	5/7	4/6	2/3	1/2
YS1N-20F	12/27	5/10	3/5	2/3	2/4	1/3	1/1	-/1	28/-	15/23	7/12	7/10	6/8	4/6	2/3	1/2
YS1N-25F	16/36	7/14	4/7	3/6	3/5	2/4	1/2	-/1	37/-	20/30	10/16	9/13	8/11	6/8	3/4	2/3
YS1N-32F	20/45	9/17	5/9	4/8	4/6	3/5	1/2	1/2	47/-	25/38	13/20	11/16	10/13	7/10	4/6	3/4
YS1N-38F	28/63	13/25	7/13	6/11	5/9	4/7	2/4	1/2	66/-	35/53	18/29	16/23	14/19	10/15	5/8	4/6
YS1N-40F	28/63	13/25	7/13	6/11	5/9	4/7	2/4	1/2	66/-	35/53	18/29	16/23	14/19	10/15	5/8	4/6
YS1N-50F	40/90	19/35	10/19	9/16	8/13	6/10	3/5	2/4	94/-	50/76	26/41	23/33	20/27	15/21	8/12	6/8
YS1N-65F	52/118	25/46	14/25	12/21	10/17	8/13	4/7	3/5	122/-	65/100	34/54	30/43	26/36	19/28	11/15	7/11

- When mercury lamp lights, the starting current is about 1.5–1.8 times the normal current and its duration may be a few minutes (within 8 times). Magnetic contactors should be selected so the rated operational current will be the same as the total load current of the mercury lamp loads.
- The values of above table show available quantities as connected in parallel.

## Application to Capacitor-Switching

Contactor Type	Single Phase (2 pole series connection)				Three Phase			
	200-240V		380-440V		200-240V		380-440V	
	(kVA)	(A)	(kVA)	(A)	(kVA)	(A)	(kVA)	(A)
YS1N-9F	1.2	6	1.7	4.3	2	6	3	4.3
YS1N-12F	1.8	9	2.4	6	3	9	5	8
YS1N-20F	1.8	9	3.2	8	3	9	6	9
YS1N-25F	3	15	4.8	12	5	15	10	15
YS1N-32F	4	20	6	15	7	20	15	23
YS1N-38F	5	25	8	20	8	23	20	30
YS1N-40F	5	25	8	20	8	23	20	30
YS1N-50F	7.5	38	12	30	13	38	26	40
YS1N-65F	9	45	16	40	15	45	30	46
YS1N-80F	10	50	20	50	20	58	35	53
YS1N-100F	13	65	20	50	26	75	50	76
YS1N-125F	15	75	26	65	26	75	50	76
YS1N-150F	18	90	30	75	35	105	70	105
YS1N-180F	20	100	36	90	40	115	75	114
YS1N-220F	26	130	40	100	45	130	80	120
YS1N-300F	30	150	60	150	50	150	100	150

1. The making and breaking capacity of the contactor are more than 15 times the rated operational current for capacitor loads in this table.
2. For applications without series reactor: The contactor should be selected to have the making current capacity which is more than 1.5 times the inrush current of the capacitor according to percentage impedance of transformer and impedance of the electric circuit.
3. Large transient inrush current may occur at the moment of switching the capacitors. So when inrush current of capacitor exceeds 15 times the rated operational current of the magnetic contactor, series reactor which has 6% of capacitor reactance shall be connected in the circuit.
4. At single phase application, two poles are used for switching of the capacitor.

**TYPICAL FULL LOAD CURRENT OF INDUCTION MOTORS**

Single-Phase Motors				Three-Phase, 4-Pole Motors 50/60 Hz							
kW	hp	220V A	240V A	kW	hp	220-230V A	380-400V A	415V A	440V A	500V A	660-690V A
0.37	0.5	3.9	3.6	0.37	0.5	1.8	1.03	-	0.99	1	0.6
0.55	0.75	5.2	4.8	0.55	0.75	2.75	1.6	-	1.36	1.21	0.9
0.75	1	6.6	6.1	0.75	1	3.5	2	2	1.68	1.5	1.1
1.1	1.5	9.6	8.8	1.1	1.5	4.4	2.6	2.5	2.37	2	1.5
1.5	2	12.7	11.7	1.5	2	6.1	3.5	3.5	3.06	2.6	2
1.8	2.5	15.7	3.6	2.2	3	8.7	5	5	4.42	3.8	2.8
2.2	3	18.6	4.8	3	4	11.5	6.6	6.5	5.77	5	3.8
3	4	24.3	6.1	3.7	5	13.5	7.7	7.5	7.1	5.9	4.4
4	5.5	29.6	8.8	4	5.5	14.5	8.5	8.4	7.9	6.5	4.9
4.4	6	34.7	11.7	5.5	7.5	20	11.5	11	10.4	9	6.6
5.2	7	39.8	36.5	7.5	10	27	15.5	14	13.7	12	8.9
5.5	7.5	42.2	38.7	9	12	32	18.5	17	16.9	13.9	10.6
6	8	44.5	40.8	10	13.5	35	20	-	-	15	11.5
7	9	49.5	45.4	11	15	39	22	21	20.1	18.4	14
7.5	10	54.4	50	15	20	52	30	28	26.5	23	17.3
				18.5	25	64	37	35	32.8	28.5	21.3
				22	30	75	44	40	39	33	25.4
				25	35	85	52	47	45.3	39.4	30.3
				30	40	103	60	55	51.5	45	34.6
				33	45	113	68	60	58	50	39
				37	50	126	72	66	64	55	42
				40	54	134	79	71	67	60	44
				45	60	150	85	80	76	65	49
				51	70	170	98	90	83	75	57
				55	75	182	105	100	90	80	61
				59	80	195	112	105	97	85	66
				63	85	203	117	115	109	89	69
				75	100	240	138	135	125	105	82
				80	110	260	147	138	131	112	86
				90	125	295	170	165	146	129	98
				100	136	325	188	182	162	143	107
				110	150	356	205	200	178	156	118
				129	175	420	242	230	209	184	135
				132	180	425	245	240	215	187	140
				140	190	450	260	250	227	200	145
				147	200	472	273	260	236	207	152
				150	205	483	280	270	246	210	159
				160	220	520	300	280	256	220	170
				180	245	578	333	320	289	254	190
				185	250	595	342	325	295	263	200
				200	270	626	370	340	321	281	215
				220	300	700	408	385	353	310	235
				250	340	800	460	425	401	360	274
				257	350	826	475	450	412	365	280
				280	380	900	510	475	450	400	305
				295	400	948	546	500	473	416	320
				300	410	980	565	510	481	420	325
				315	430	990	584	535	505	445	337
				335	450	1100	620	550	518	472	355
				355	480	1150	636	580	549	500	370
				375	500	1180	670	610	575	527	395
				400	545	1250	710	650	611	540	410
				425	580	1330	760	690	650	574	445
				445	600	1400	790	730	680	595	455
				450	610	1410	800	740	690	608	460
				475	645	1490	850	780	730	645	485
				500	680	1570	900	820	780	680	515

Notes : 1. The full load current of the motor varies with the supply voltage, frequency, number of poles, and number of phases (single- or three-phase).  
 2. For selection of contactors and thermal overload relays, confirm the actual full load current of the motor.

**D**

**IEC Contactors**