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Laboratory

實驗室



Production equipment

生產設備



Measuring instrument

量測儀器



Factory

自有廠房



# 88 Series Thermal Circuit Breaker

## Single Pole Push to Reset



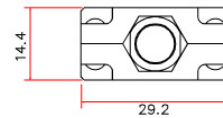
**•Technical data**

- Current rating range 3~30A
- Input voltage rating 125/250VAC; 32/50VDC
- Interrupting Capacity 125/250VAC x 1,000A(UL 1077)
- Typical life 1,000 operations at 200% overload.
- Insulation co-ordination Rated impulse withstand voltage 2.5kV
- Dielectric Strength > 1.500VAC/min.
- Insulation Resistance >100MOHM (DC 500V)
- Degree of protection Terminal area IP00, operating area IP40



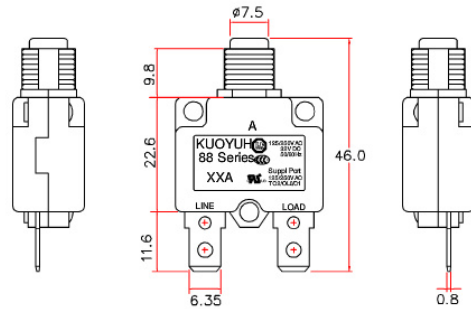
**•Mechanical/Environmental Data**

- Operating Ambient Temperature: -10°C to +60°C
- Termination: 250"(6.35mm) quick connects or solder terminals
- Mounting: Various options. See Ordering Information and drawings



**•Compliance with Rohs**

The product accords with the requirement of ROHS (2011/65/EU)  
Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)



**•Compliance with REACH, PAHS, PH1, PH2, PH3**

- Ignition Proof Yes, UL PEQZ2.E155159

**•Typical applications**

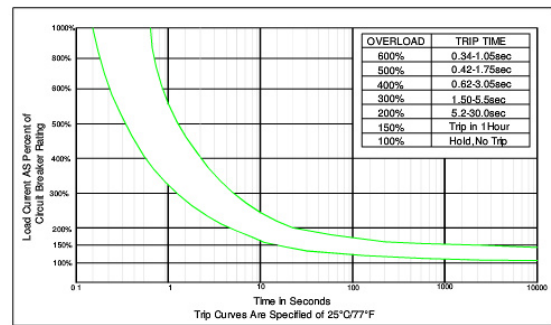
Transformers, Motors, Battery chargers, Power supplies, appliances, extra low voltage systems, machinery.

**•Calibration(at25°C)**

- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 5-30 sec Trip
- 300% of Rated Current: 1.5-5.0 sec Trip

\* Dimension in mm:

**•88 Series 3A-30A Trip Time Curves**



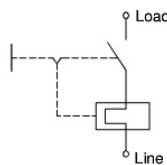
**•Approval**

Approval & File No.	Rated current	Rated voltage
•CUL UL E155159	3-30A	125/250VAC; 50VDC
•TUV SUD B15 09 58611 007	3-20A	125/250VAC; 32VDC
•CCC 201101030752058	3-20A	125/250VAC.
•VDE 40036160	3-16A	125/250VAC
•CSA 102199	3-16A	125VAC

**•Max. Internal Resistance**

Amp rating	Max resistance
3.0 - 5.0Amp	<0.225 Ohms
6.0 - 8.0Amp	<0.175 Ohm
9.0 - 12.0Amp	<0.125 Ohm
13.0 - 16.0Amp	<0.050 Ohm
17.0 - 20.0Amp	<0.040 Ohm
21.0 - 25.0Amp	<0.030 Ohm
26.0 - 30.0Amp	< 0.020 Ohm

**•Internal connection diagram**



**•Ambient Temperature Correction Factor**

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping. Please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 10A  
Ambient Temperature = 45°C  
Multiplication Factor = 0.85  
Recommended Rating= 10A/0.85=11.8A  
Select the Nearest Rating = 12A

\* The specification subject to change without notice. The drawing is for reference only.

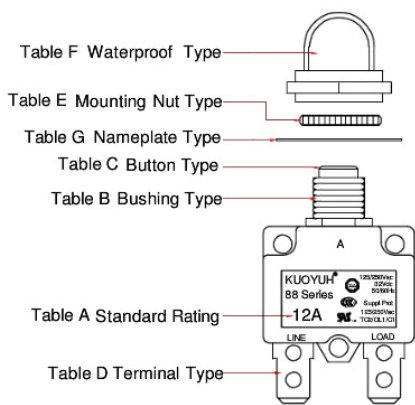




Order Guide	<b>88- 12- A1 B 1 4- P 0 0 N B</b>
Series No.	
Amp Rating.	(Table A)
Bushing Type.	(Table B)
Color of Button.	(Table C)
Terminal Type.	(Table D)
Voltage.	1=UL & CSA 125Vac, 2=TUV & CCG 250Vac, 3=1+2 125/250Vac, 4=UL+TUV+CCG 125/250Vac; 32Vdc, 5=Client designation 6=UL 125/250Vac; 50Vdc, 8=VDE 125/250Vac, 9=CSA 125Vac U3 type
Mounting Nut Type.	(Table E)
Waterproof Type.	(Table F)
Nameplate Type.	(Table G)
Terminal Finish.	S=Plate with Tin N=Plate with Nickel O=No plate
Body Type.	B=Black W=White

03= 3.0A	12= 12.0A
3.5= 3.5A	13= 13.0A
04= 4.0A	15= 15.0A
05= 5.0A	16= 16.0A
06= 6.0A	17= 17.0A
07= 7.0A	18= 18.0A
08= 8.0A	20= 20.0A
09= 9.0A	22= 22.0A
10= 10.0A	25= 25.0A
11= 11.0A	30= 30.0A

<b>P1</b> Plastic M11XP1.0	<b>P2</b> Plastic M12XP1.0	<b>P3</b> Plastic 3/8"-27T	<b>PL</b> Plastic No thread
<b>KF</b> Plastic Snap in	<b>PS</b> Plastic Snap in	<b>AW</b> (White) Plastic No thread	<b>P0</b> Plastic No thread
<b>A1</b> Metal M11XP1.0	<b>B1</b> Metal M11XP1.0	<b>A3</b> Metal 3/8"-27T	<b>B3</b> Metal 3/8"-27T



<b>P1,A1,B1</b>	<b>A2,P2</b>	<b>P3,A3,B3</b>	<b>AW/AB</b>	<b>P0</b>	<b>PS,KF</b>
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<b>B = Black button (黑推桿)</b>	<b>W = White button (白推桿)</b>	<b>R = Red button (紅推桿)</b>
Normal Amp stamp Amps=black	Normal Amp stamp Amps=black	NORMAL AMP STAMP Amps=white
1	5	6
7	8	9
X	Y	Z

<b>0</b> None	<b>P</b> Plastic	<b>Q</b> Plastic	<b>A</b> Metal	<b>B</b> Metal	<b>4</b> Metal	<b>5</b> Metal	<b>6</b> Metal
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<b>0</b> None	<b>R</b>	<b>M</b>	<b>V</b>	<b>F</b>	<b>T</b>	<b>U</b>
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<b>0</b> None	<b>B</b> Black plate	<b>A</b> Black plate	<b>S</b> White plate	<b>C</b> Black plate	<b>L</b> Black plate
<b>W</b> White plate			<b>X</b> White plate		
				For 3/8"-27T	For Waterproof

<b>1</b> Straight 11.8mm	<b>2</b> 90° bend	<b>3</b> 90° bend	<b>4</b> Live pin Straight Lead pin 90° bend	<b>5</b> Live pin 90° bend Lead pin Straight	<b>6</b> Straight 8.0mm	<b>7</b> Live pin 90° bend down Lead pin bend up	<b>8</b> 45° bend up	<b>9</b> 45° bend down	<b>X</b> Straight 4.0mm	<b>F</b> Screw #8-32 Straight	<b>L</b> Screw #8-32 90° bend up	<b>J</b> Screw #8-32 90° bend down	<b>G</b> Live pin Screw 90° bend Lead pin 90° bend	<b>K</b> Live pin Screw 90° bend Lead pin Screw Straight	<b>H</b> Live pin Screw 90° bend Lead pin Screw Straight
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\* The specification subject to change without notice. This drawing is for reference only.

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 Date: 2017.02.20



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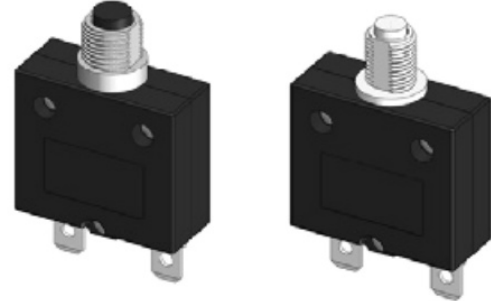
# 98 Series Thermal Circuit Breaker

## Single Pole Push to Reset



### •Technical data

- Current rating range 5~30A
- Input voltage rating 125/250VAC; 32/50VDC
- Interrupting Capacity 125/250VAC x 1,000A(UL 1077)
- Typical life 1,000 operations at 200% overload.
- Insulation co-ordination Rated impulse withstand voltage 2.5kV
- Dielectric Strength > 1,500VAC/min.
- Insulation Resistance >100MOHM (DC 500V)
- Degree of protection Terminal area IP00, operating area IP40



### •Mechanical/Environmental Data

- Operating Ambient Temperature: -10°C to +60°C
- Termination: 250"(6.35mm) quick connects or solder terminals
- Mounting: Various options. See Ordering Information and drawings

### •Compliance with Rohs

The product accords with the requirement of ROHS( 2011/65/EU)  
Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)

### •Compliance with REACH, PAHS, PH1, PH2, PH3

- Ignition Proof Yes, UL PEQ22.E155159

### •Typical applications

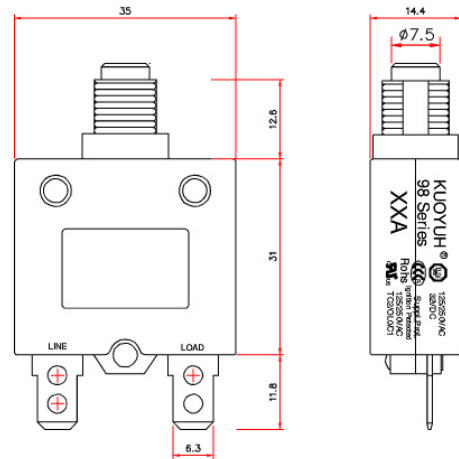
Transforms, Motors, Battery chargers, Power supplies, appliances, extra low voltage systems, machinery.

### •Calibration(at25°C)

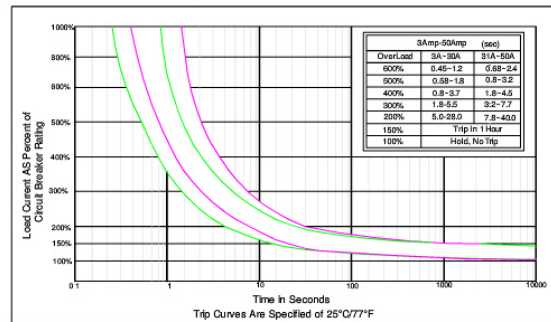
- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 5-30 sec Trip
- 300% of Rated Current: 1.5-5.0 sec Trip

### •Approval

Approval & File No.	Rated current	Rated voltage
•CUL UL E155159	3-50A	125/250VAC; 50VDC
•TUV SUD B15 09 58611 007	3-30A	125/250VAC; 32VDC
•CCC 201101030752058	3-30A	125/250VAC.
•VDE 40036160	3-16A	125/250VAC
•CSA 102199	3-30A	125VAC



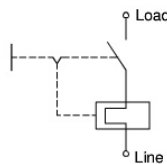
### •98 Series 3A-50A Trip Time Curves



### •Max. Internal Resistance

Amp rating	Max resistance
3-5 A	<0.225 Ohms
6-8 A	<0.175 Ohms
9-11 A	<0.125 Ohms
12-13 A	<0.050 Ohms
14-17 A	<0.040 Ohms
18-24 A	<0.030 Ohms
25-35 A	< 0.020 Ohms
36-50 A	< 0.010 Ohms

### •Internal connection diagram



### •Ambient Temperature Correction Factor

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping. Please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 10A  
Ambient Temperature = 45°C  
Multiplication Factor = 0.85  
Recommended Rating= 10A/0.85=11.8A  
Select the Nearest Rating = 12A

\* The specification subject to change without notice. The drawing is for reference only.



Order Guide	<b>98- 20- A1 B 1 4- P 0 0 N B</b>
Series No.	
Amp Rating.	(Table A)
Bushing Type.	(Table B)
Color of Button.	(Table C)
Terminal Type.	(Table D)
Voltage.	1=UL& CSA 125Vac, 2=TUV & CCC 250Vac, 3=1+2 125/250Vac, 4=UL+TUV+CCC 125/250Vac/32Vdc, 5=Client designation 6=UL 125/250Vac/50Vdc, 8=VDE 125/250Vac, 9=CSA 125Vac U3 type
Mounting Nut Type.	(Table E)
Waterproof Type.	(Table F)
Nameplate Type.	(Table G)
Terminal Finish.	S=Plate with Tin N=Plate with Nickel 0=No plate
Body Type.	B=Black W=White

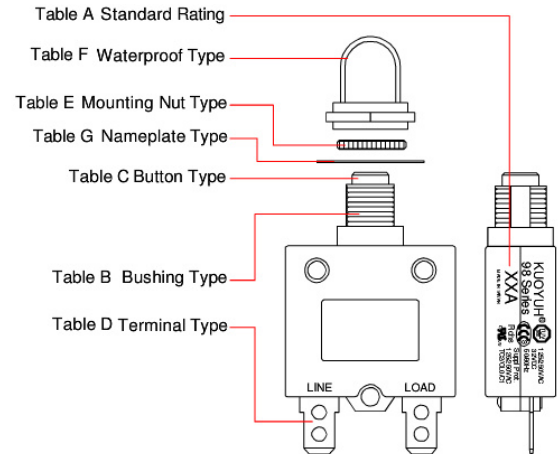
03= 3.0A	13= 13.0A
3.5= 3.5A	15= 15.0A
04= 4.0A	16= 16.0A
05= 5.0A	17= 17.0A
06= 6.0A	18= 18.0A
07= 7.0A	20= 20.0A
08= 8.0A	25= 25.0A
09= 9.0A	30= 30.0A
10= 10.0A	35= 35.0A
11= 11.0A	40= 40.0A
12= 12.0A	50= 50.0A

<b>A1</b> Metal M11XP1.0	<b>B1</b> Metal M11XP1.0	<b>A2</b> Metal M12XP1.0	<b>A3</b> Metal 3/8"-27T
<b>B3</b> Metal 3/8"-27T	<b>B7</b> Metal 7/16"-27T	<b>P1</b> Plastic M11XP1.0	<b>P2</b> Plastic M12XP1.0
<b>P3</b> Plastic 3/8"-27T	<b>PS</b> Plastic Snap in	<b>KF</b> Plastic Snap in	
Panel Hole			
P1,A1,B1	A2,P2	P3,A3,B3	PS,KF
Panel Hole			

0 None	P Plastic Integrated Knurl nut	Q Plastic Knurl nut	A Metal Knurl nut	B Metal Hex nut M11 H=14 M12 H=15	C Metal A (+)	4 Metal G (+)	5 Metal A (+)	6 Metal B (+)
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0 None	R #12.0±0.5	V #10.5±0.5	F #12.0±0.5	U #8.5±0.5
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1 Straight 11.8mm	2 90° bend	3 90° bend	4 Live pin 90° bend Load pin Straight	5 Live pin Straight Load pin 90° bend	8 45° bend up	9 45° bend down	F Screw #8-32 Straight	L Screw #8-32 90° bend up	J Screw #8-32 90° bend down	G Live pin Screw 90° bend Load pin 90° bend	K Live pin 90° bend Load pin 90° bend	H Live pin 90° bend Load pin Straight
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B = Black button (黑推桿) W = White button (白推桿) R = Red button (紅推桿)		
1	5	6
7	8	9
X	Y	Z

0 None	B Black plate	A Black plate	S Black plate	L Black plate
	W White plate		X White plate	

\* The specification subject to change without notice. The drawing is for reference only.

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 Issue: F1  
 Date: 2017.02.20





# 98H Series Thermal Circuit Breaker

## Single Pole Push to Reset

### •Technical data

- Current rating range 40~80A
- Input voltage rating 125/250VAC; 50VDC
- Interrupting Capacity 125/250VAC x 1,000A(UL 1077)
- Typical life 500 operations at 200% overload.
- Insulation co-ordination Rated impulse withstand voltage 2.5kV
- Dielectric Strength >1,500VAC/min.
- Insulation Resistance >100MOHM (DC 500V)
- Degree of protection Terminal area IP00, operating area IP40

### •Mechanical/Environmental Data

- Operating Ambient Temperature: -10°C to +60°C
- Termination: Thickness 1.5mm; 10/24 unc Screwa. Nickle of plated
- Mounting: Various options. See Ordering Information and drawings

### •Compliance with Rohs

The product accords with the requirement of ROHS( 2011/65/EU)  
Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)

### •Compliance with REACH, PAHS, PH1, PH2, PH3

### •Typical applications

Transforms, Motors, Battery chargers, Power supplies, appliances, extra low voltage systems, machinery.

### •Calibration(at25°C)

- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 5-38 sec Trip
- 300% of Rated Current: 3.0-7.5 sec Trip

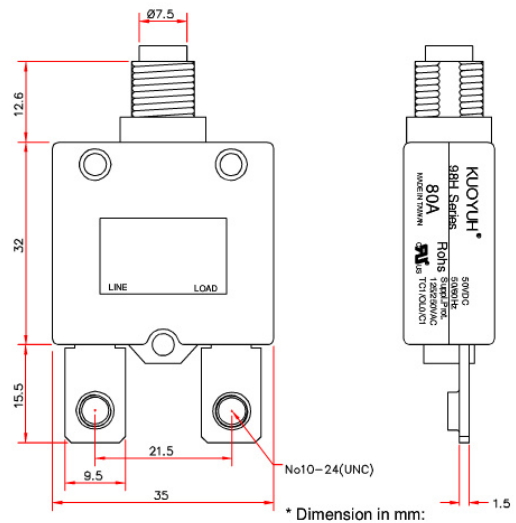
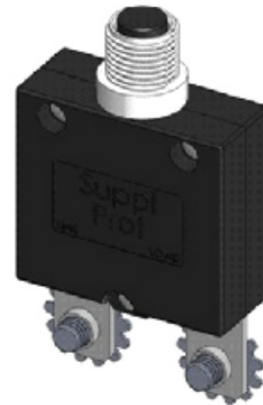
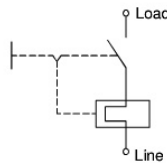
### •Approval

- Approval & File No. Rated current Rated voltage
- CUL UL E155159 40-80A 125/250VAC; 50VDC

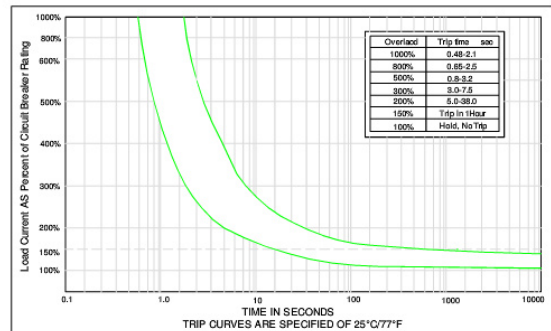
### •Max. Internal Resistance

Amp rating	Max resistance
40~45 A	<0.050 Ohms
50-60 A	<0.040 Ohms
70 A	<0.030 Ohms
80 A	< 0.020 Ohms

### •Internal connection diagram



### •98H Series 40~80A Trip Curves



### •Ambient Temperature Correction Factor

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping. Please multiply the circuit breaker current ratings by the derating factor shown below.

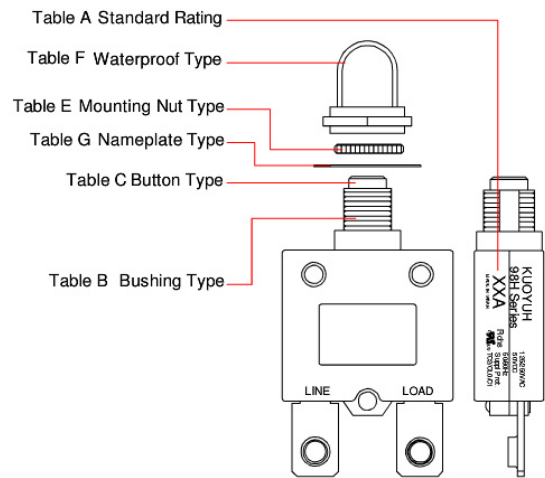
Example : Normal Continuous Current = 10A  
Ambient Temperature = 45°C  
Multiplication Factor = 0.85  
Recommended Rating= 10A/0.85=11.8A  
Select the Nearest Rating = 12A

\* The specification subject to change without notice. The drawing is for reference only.

**KUOYUH®**

Order Guide	<b>98H -80- A1 B F 4- P 0 0</b>
Series No.	
Amp Rating.	40=40A, 50=50A, 60=60A, 70=70A, 80=80A
Bushing Type.	(Table B)
Color of Button.	(Table C)
Terminal Type.	
Voltage.	4=CUL 125/250Vac, 50VDC
Mounting Nut Type.	(Table E)
Waterproof Type.	(Table F)
Nameplate Type.	(Table G)

<b>A1</b> Metal M11XP1.0	<b>B1</b> Metal M11XP1.0	<b>A2</b> Metal M12XP1.0	<b>A3</b> Metal 3/8"-27T
<b>B3</b> Metal 3/8"-27T	<b>B7</b> Metal 7/16"-27T	<b>P1</b> Plastic M11XP1.0	<b>P2</b> Plastic M12XP1.0
Panel Hole		Panel Hole	



<b>0</b> None	<b>P</b> Plastic Integrated Krauf nut	<b>Q</b> Plastic Krauf nut	<b>A</b> Metal Krauf nut	<b>B</b> Metal Hexnut M11 H=14 M12 H=15	<b>C</b> Metal	<b>4</b> Plastic	<b>5</b> Metal	<b>6</b> Plastic

<b>B</b> = Black button (黑推桿)	<b>W</b> = White button (白推桿)	<b>R</b> = Red button (紅推桿)

<b>0</b> None	<b>R</b> #12.0±0.5	<b>F</b> #13.0±0.5	<b>V</b> #12.0±0.5	<b>U</b> #11.0±0.5	<b>C</b> #11.0±0.5
	R1=M11xP1.0 Clean R2=M12xP1.0 Clean R3=3/8"-27T Clean	F1=M11xP1.0 Clean F2=M12xP1.0 Clean F3=3/8"-27T Clean	V1=M11xP1.0 Clean V2=M12xP1.0 Clean	U3=3/8"-27T Black	C3=3/8"-27T Clean

<b>0</b> None	<b>B</b> Black plate	<b>A</b> Black plate	<b>S</b> Black plate	<b>A</b> Black plate
	<b>W</b> White plate		<b>X</b> White plate	

\* The specification subject to change without notice. The drawing is for reference only.

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 Issue: F1  
 Date: 2017.02.20

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 國都企業股份有限公司  
 64057 雲林縣六甲鎮科道17號

# KUOYUH®

## 91 Series Thermal Circuit Breaker

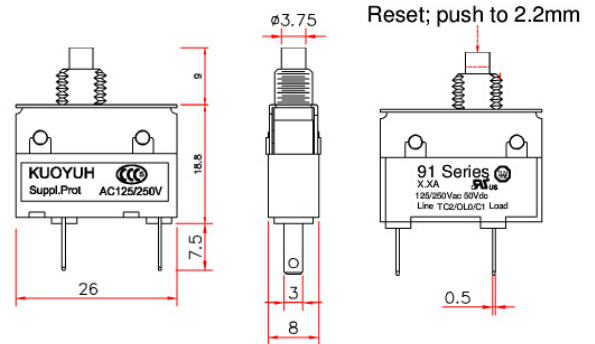
### Single Pole Push to Reset



- Technical data
- Current rating range 0.5~10A
- Input voltage rating 125/250VAC; 50VDC
- Interrupting Capacity 125/250VAC x 1,000A(UL 1077)
- Typical life 1,000 operations at 200% overload.
- Insulation co-ordination Rated impulse withstand voltage 2.5kV
- Dielectric Strength > 1,500VAC/min.
- Insulation Resistance >100MOHM (DC 500V)
- Degree of protection Terminal area IP00, operating area IP40



- Mechanical/Environmental Data
- Operating Ambient Temperature: -10°C to +60°C
- Termination: 110"(2.8mm) quick connects or solder terminals
- Mounting: Various options. See Ordering Information and drawings
- Compliance with Rohs  
The product accords with the requirement of ROHS( 2011/65/EU)  
Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)

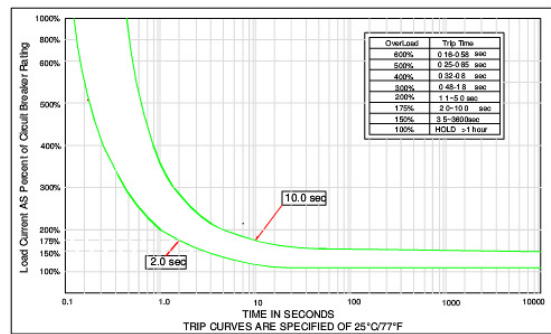


- Compliance with REACH, PAHS, PH1, PH2, PH3

- Typical applications  
Transformers, Motors, Battery chargers, Power supplies, appliances, extra low voltage systems, machinery.

- Calibration(at25°C)
- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 175% of Rated Current: 2.0-10.0 sec Trip
- 200% of Rated Current: 1.1-5.0 sec Trip

### •91 Series 0.5~10A Trip Curves



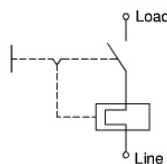
- Approval
- Approval & File No. Rated current Rated voltage
- CUL UL E155159 0.5-10.0A 125/250VAC; 50VDC
- TUV SUD B150158611006 0.5-10.0A 125/250VAC; 50VDC
- CCC 2011101030752058 1.0-10.0A 125/250VAC.
- VDE 40036160 1.0-10.0A 125/250VAC.

### •Max. Internal Resistance

Rated current	Max. Internal Resistance
1.0A or less	400mOhms or less
1.25A or more	200mOhms or less

- <1>Rated current: 1.0A or less 400mOhms or less.
- <2>Rated current: 1.25A or more 200mOhms or less.

### •Internal connection diagram



### •Ambient Temperature Correction Factor

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping. Please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 10A  
Ambient Temperature = 45°C  
Multiplication Factor = 0.85  
Recommended Rating= 10A/0.85=11.8A  
Select the Nearest Rating = 12A

\* The specification subject to change without notice. The drawing is for reference only.



Order Guide	91- Series No.	A Type of Button 按鍵規格	N Fitting Plate 固定方式	R Color of Button 按鍵顏色	- 2.5A Rating Amp 電流額定	- 0 Terminal Type 端子種類	0 Terminal Finish 端子處理
		  			0.5A 0.6A 0.7A 0.8A 1.0A 1.25A 1.4A 1.5A 1.6A 1.75A 2.0A 2.25A 2.5A 2.75A 3.0A 3.15A 3.3A 3.5A 3.75A 4.0A 4.5A 5.0A 5.5A 6.0A 6.3A 6.5A 7.0A 7.5A 8.0A 9.0A 10.0A		
		N type P type T type M type					
		R= Red, B= Black, V= Violet G= Gray, Y= Yellow, U= Blue, O=Orange,					
		0= Plate with Tin, N= Plate with Nickel					

\* The specification subject to change without notice. The drawing is for reference only.

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 Taiwan Tel: 886 5 551 3222 Fax: 886 5 551 3030  
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 Issue: A0  
 Date: 2017.02.20



# KUOYUH®

## 91L Series Thermal Circuit Breaker

### Single Pole Push to Reset



**•Technical data**

- Current rating range 2~20A
- Input voltage rating 125/250VAC; 50VDC
- Interrupting Capacity 125/250VAC x 1,000A(UL 1077)
- Typical life 1,000 operations at 200% overload.
- Insulation co-ordination Rated impulse withstand voltage 2.5kV
- Dielectric Strength > 1,500VAC/min.
- Insulation Resistance >100MOHM (DC 500V)
- Degree of protection Terminal area IP00, operating area IP40



**•Mechanical/Environmental Data**

- Operating Ambient Temperature: -10°C to +60°C
- Termination: 250"(6.35mm) quick connects or solder terminals
- Mounting: Various options. See Ordering Information and drawings

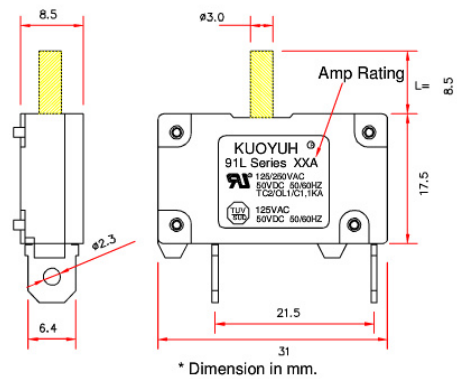
**•Compliance with Rohs**

The product accords with the requirement of ROHS( 2011/65/EU) Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)

**•Compliance with REACH, PAHS, PH1, PH2, PH3**

**•Typical applications**

Transforms, Motors, Battery chargers, Power supplies, appliances, extra low voltage systems, machinery.



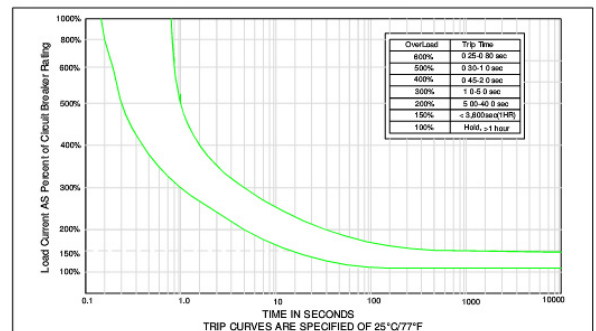
**•Calibration(at25°C)**

- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 5.00-40.0 sec Trip
- 300% of Rated Current: 1.0-5.0 sec Trip

**•Approval**

Approval & File No.	Rated current	Rated voltage
•CUL UL E155159	2-20A	125/250VAC; 50VDC
•TUV SUD B150158611006	5-20A	125VAC; 50VDC

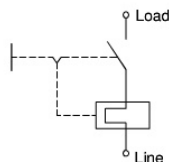
**•91L Series 2A~20A Trip Time Curves**



**•Max. Internal Resistance**

2.0-5.0Amp	<0.450 ohms
5.1-7.0Amp	<0.150 ohms
7.1-10.0Amp	<0.105 ohms
10.1-12.0Amp	<0.075 ohms
12.1-15.0Amp	<0.055 ohms
15.1-17.0Amp	<0.035 ohms
17.1-20.0Amp	<0.025 ohms

**•Internal connection diagram**



**•Ambient Temperature Correction Factor**

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping. Please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 10A  
 Ambient Temperature = 45°C  
 Multiplication Factor = 0.85  
 Recommended Rating= 10A/0.85=11.8A

\* The specification subject to change without notice. The drawing is for reference only.

**KUOYUH®**

<b>Order Guide</b>	<b>91L</b>	<b>- 10A -</b>	<b>D</b>	<b>Y</b>	<b>N</b>	<b>Q</b>	<b>6</b>	<b>N</b>
後列號	Series No.	Rating Amp	Button Length	Button Color	Bracket Type	Nut Type	Terminal Type	Terminal Finish
電流額定	<b>2A.....20A</b>							
按鍵長度								
推桿顏色	<b>Y=Yellow R=Red</b>							
固定方式	<p><b>N Type</b>      <b>1 Type</b> (Plastic M11X P1.0)      <b>3 Type</b> (Plastic 3/8"-27T)</p> <p><b>X Type</b> (Metal)      <b>I Type</b> (Metal)      <b>Z Type</b> (Metal)</p>							
螺母配件	<b>N =None</b>	<b>P Type (Plastic 18.5)</b> P1=M11*P1.0 P3=3/8"-27T	<b>Q Type (Plastic 14.5)</b> Q1=M11*P1.0 Q3=3/8"-27T	<b>B Type (Metal 14.0)</b> B1=M11*P1.0 B3=3/8"-27T	<b>S Type (Metal 12.0)</b> S3=3/8"-27T			
端子種類	<p><b>6</b> =6.35mm; 0.25" TAB</p> <p><b>4</b> =4.8mm; 0.187" TAB</p>							
端子電鍍	<p><b>S</b> =Plate with Tin</p> <p><b>N</b> =Plate with Nickel</p>							

\* The specification subject to change without notice. The drawing is for reference only.

# KUOYUH®

## 92 Series Thermal Circuit Breaker

### Single Pole Push to Reset

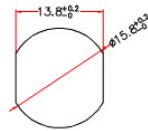


**•Technical data**

- Current rating range 2~20A
- Input voltage rating 125/250VAC; 50VDC
- Interrupting Capacity 125/250VAC x 1,000A(UL 1077)
- Typical life 1,000 operations at 200% overload.
- Insulation co-ordination Rated impulse withstand voltage 2.5kV
- Dielectric Strength > 1,500VAC/min.
- Insulation Resistance >100MOHM (DC 500V)
- Degree of protection Terminal area IP00, operating area IP40

**•Mechanical/Environmental Data**

- Operating Ambient Temperature: -10°C to +60°C
- Termination: 250"(6.35mm) quick connects or solder terminals
- Mounting: Various options. See Ordering Information and drawings
- Panel Cutout:



**•Compliance with Rohs**

The product accords with the requirement of ROHS( 2011/65/EU)  
Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)

**•Compliance with REACH, PAHS, PH1, PH2, PH3**

**•Typical applications**

Transforms, Motors, Battery chargers, Power supplies, appliances, extra low voltage systems, machinery.

**•Calibration(at25°C)**

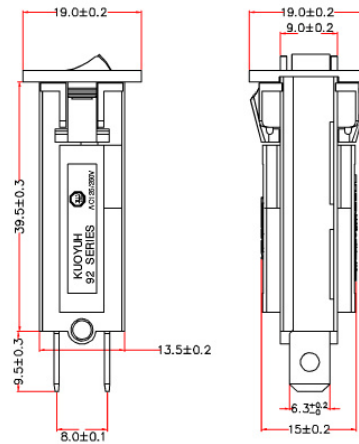
- Rated: 0.25~2.5A
- 100% of Rated Current: Hold , No Trip
  - 150% of Rated Current: Trip Within 1 Hour.
  - 200% of Rated Current: 7.5-52 sec Trip
  - 300% of Rated Current: 2.85-10 sec Trip

- Rated: 3~16A
- 100% of Rated Current: Hold , No Trip
  - 135% of Rated Current: Trip Within 1 Hour.
  - 200% of Rated Current: 5.2-30.0 sec Trip
  - 300% of Rated Current: 1.5-5.0 sec Trip

**•Approval**

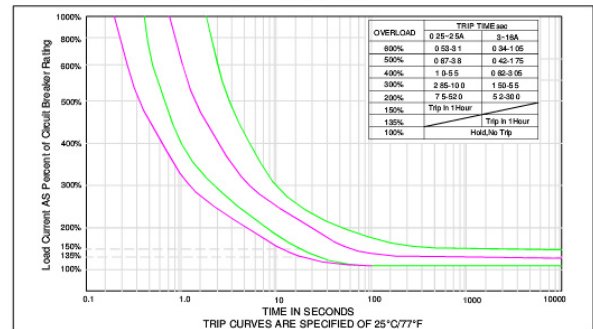
Approval & File No.	Rated current	Rated voltage
•CUL UL E155159	0.25-16A	125/250VAC; 50VDC
•TUV SUD B150158611006	0.25-16A	125/250VAC
•CCC	0.5-16A	125/250VAC
•VDE	0.5-16A	125/250VAC

ON (Contacts Close)



\* Dimension in mm.

**•92 Series 0.25~16A Trip Time Curves**



**•Ambient Temperature Correction Factor**

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping. Please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 10A  
Ambient Temperature = 45°C  
Multiplication Factor = 0.85  
Recommended Rating= 10A/0.85=11.8A

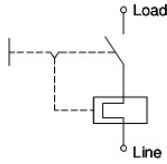
\* The specification subject to change without notice. The drawing is for reference only.

# KUOYUH

•Max. Internal Resistance

0.25-0.5Amp	<0.450 ohms
2.0-5.0Amp	<0.450 ohms
2.0-5.0Amp	<0.450 ohms
2.0-5.0Amp	<0.450 ohms
5.1-7.0Amp	<0.150 ohms
7.1-10.0Amp	<0.105 ohms
10.1-12.0Amp	<0.075 ohms
12.1-15.0Amp	<0.055 ohms
15.1-16.0Amp	<0.035 ohms

•Internal connection diagram



•92 Series Order Guide

Order Guide	92 - Series No.	1200 - Amp Rating	B Color of Button	G Color of Cover	6 Terminal Type	N Terminal Finish
0025= 0.25A	0250= 2.5A	0750= 7.5A				
0050= 0.5A	0300= 3.0A	0800= 8.0A				
0075= 0.75A	0320= 3.2A	0900= 9.0A				
0100= 1.0A	0350= 3.5A	1000=10.0A				
0125= 1.25A	0400= 4.0A	1100=11.0A				
0150= 1.5A	0450= 4.5A	1200=12.0A				
0175= 1.75A	0500= 5.0A	1300=13.0A				
0200= 2.0A	0600= 6.0A	1500=15.0A				
0225= 2.25A	0700= 7.0A	1600=16.0A				
<p><b>B</b>=Black(黑色)</p>						
<p><b>B</b>=Black(黑色) <b>G</b>=Gray(灰色)</p>						
<p><b>6</b>=250" quick connects Straight</p>						
<p><b>1</b>=250" quick connects 90° bend</p>						
<p><b>2</b>=250" quick connects 45° bend</p>						
<p><b>S</b> = Plate with Tin <b>N</b> = Plate with Nickel</p>						

\* The specification subject to change without notice. The drawing is for reference only.



# 88A Series Thermal Circuit Breaker

## Single Pole Push to Reset

**•Technical data**

- Current rating range 3~16A
- Input voltage rating 125/250VAC; 50VDC
- Interrupting Capacity 125/250VAC x 1,000A(UL 1077)
- Typical life 1,000 operations at 200% overload.
- Insulation co-ordination Rated impulse withstand voltage 2.5kV
- Dielectric Strength > 1,500VAC/min.
- Insulation Resistance >100MOHM (DC 500V)
- Degree of protection Terminal area IP00, operating area IP40

**•Mechanical/Environmental Data**

- Operating Ambient Temperature: -10°C to +60°C
- Termination: 250"(6.35mm) quick connects or solder terminals
- Mounting: Various options. See Ordering Information and drawings
- Panel Cutout:

**•Compliance with Rohs**

The product accords with the requirement of ROHS( 2011/65/EU)  
Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)

**•Compliance with REACH, PAHS, PH1, PH2, PH3**

**•Typical applications**

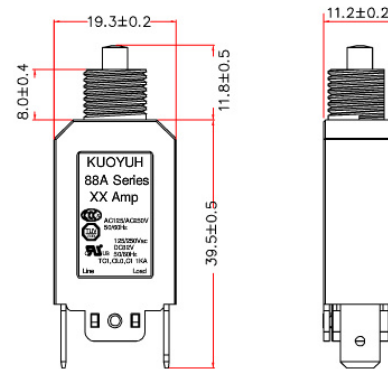
Transforms, Motors, Battery chargers, Power supplies, appliances, extra low voltage systems, machinery.

**•Calibration(at25°C)**

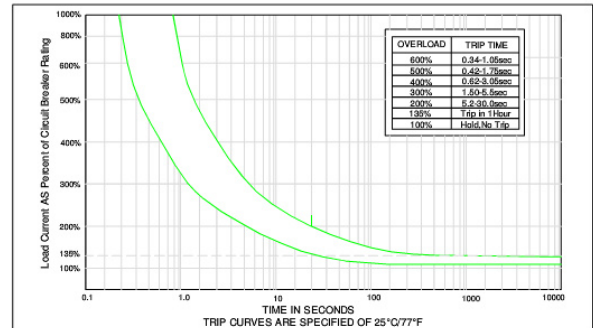
- 100% of Rated Current: Hold , No Trip
- 135% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 5.2- 30.0 sec Trip
- 300% of Rated Current: 1.5-5.5 sec Trip

**•Approval**

Approval & File No.	Rated current	Rated voltage
•CUL UL E155159	3-16A	125/250VAC; 50VDC
•TUV SUD B150158611006	3-16A	125/250VAC
•CCC	3-16A	125/250VAC
•VDE	3-16A	125/250VAC



**•88A Series 3A~16A Trip Time Curves**



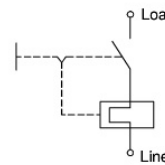
**•Ambient Temperature Correction Factor**

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

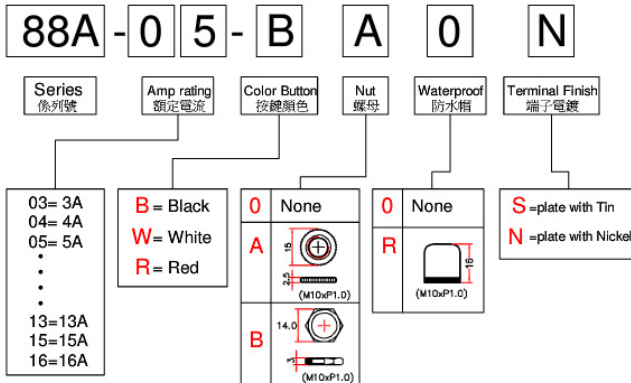
The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping. Please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 10A  
Ambient Temperature = 45°C  
Multiplication Factor = 0.85  
Recommended Rating= 10A/0.85=11.8A

**•Internal connection diagram**



**Order Guide**



\* The specification subject to change without notice. The drawing is for reference only.



# 94N Series Breaker-switch



**•Technical data**

- Current rating range 3~16A
- Input voltage rating 125/250VAC; 50VDC
- Interrupting Capacity 125/250VAC x 1,000A(UL 1077)
- Breaking Capacity 6 times rated current
- Dielectric Strength > 1.500VAC/min.
- Insulation Resistance >100MOHM (DC 500V)
- Degree of protection Terminal area IP00, operating area IP40

**•Mechanical/Environmental Data**

- Operating Ambient Temperature: -10°C to +60°C
- Termination: 250"(6.35mm) quick connects or solder terminals

**•Compliance with Rohs**

The product accords with the requirement of ROHS( 2011/65/EU)  
Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)

**•Compliance with REACH, PAHS, PH1, PH2, PH3**

**•Typical applications**

Transforms, Motors, Battery chargers, Power supplies, appliances, extra low voltage systems, machinery.

**•Calibration(at25°C)**

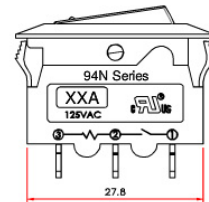
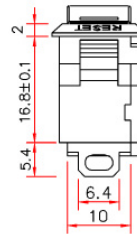
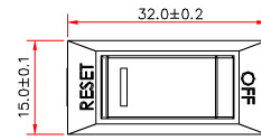
- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 5-30 sec Trip
- 300% of Rated Current: 1.5-5.0 sec Trip

**•Approval**

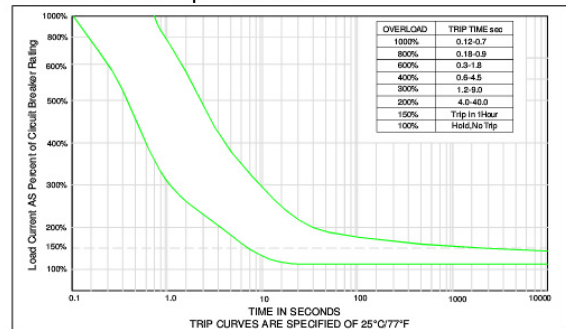
•Approval & File No.	Rated current	Rated voltage
•CUL UL E155159	3-16A	125/250VAC; 50VDC

**•How to Order**

94N	15	1	2	1	B	R	S	1	
94N	Model No.	Rating Amp	Illuminated Type	Actuator Type	Terminal Type	Base Color	Actuator Color	Terminal Finish	Lamp Type
3A.....16A									
A=Yes, 125Vac B=Yes, 250Vac 1=None									
B=Black W=White G=Gray									
R=Red(PC) O=Orange(PC) N=Clear(PC) G=Green(PC) L=Bule(PC)									
1=Black(Nylon) 2=Gray(Nylon) 3=Red(Nylon) 4=White(Nylon)									
S=Plate with Tin N=Plate with Nickel 0=None									
0=None 1=Red Neon Lamp 2=Green Neon Lamp 3=Bule Neon Lamp A=LED Lamp									



**•94N Series 3~16A Trip Time Curves**



**•Ambient Temperature Correction Factor**

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

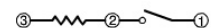
The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping. Please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 10A  
Ambient Temperature = 45°C  
Multiplication Factor = 0.85  
Recommended Rating= 10A/0.85=11.8A  
Select the Nearest Rating = 12A

**•Max.Internal Resistance**

Amp rating	Max resistance
3.0 - 5.0Amp	<0.225 Ohms
6.0 - 8.0Amp	<0.175 Ohm
9.0 - 12.0Amp	<0.125 Ohm
13.0 - 16.0Amp	<0.050 Ohm

**•Internal connection diagram**



\* The specification subject to change without notice. The drawing is for reference only.  
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Issue: A0  
Date:2017.02.20





# F88 Series Thermal Circuit Breaker

## Single Pole Push to Reset

**•Technical data**

- Current rating range 15A/125VAC; 10A/250VAC
- Input voltage rating 125/250VAC; 50VDC
- Interrupting Capacity 125/250VAC x 1,000A(UL 1077)
- Typical life 1,000 operations at 200% overload.
- Insulation co-ordination Rated impulse withstand voltage 2.5kV
- Dielectric Strength > 1,500VAC/min.
- Insulation Resistance >100MOHM (DC 500V)
- Degree of protection Terminal area IP00, operating area IP40

**•Mechanical/Environmental Data**

- Operating Ambient Temperature: -10°C to +60°C
- Termination: 250"(6.35mm) quick connects or solder terminals

**•Panel Cutout:**



**•Compliance with Rohs**

The product accords with the requirement of ROHS( 2011/65/EU)  
Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)

**•Compliance with REACH, PAHS, PH1, PH2, PH3**

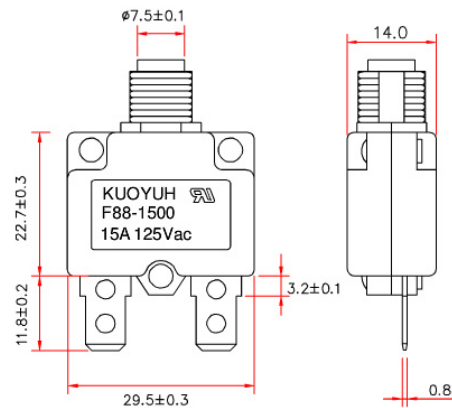
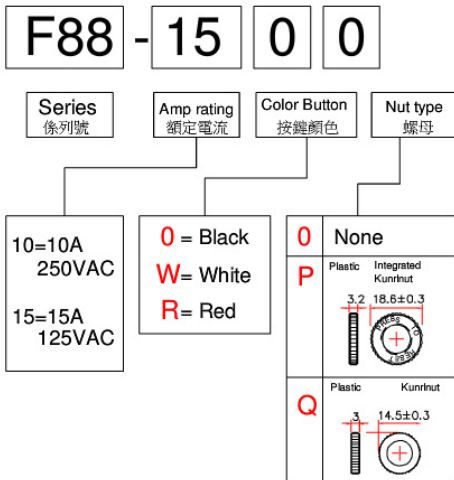
**•Typical applications**

Transformers, Motors, Battery chargers, Power supplies, appliances, extra low voltage systems, machinery.

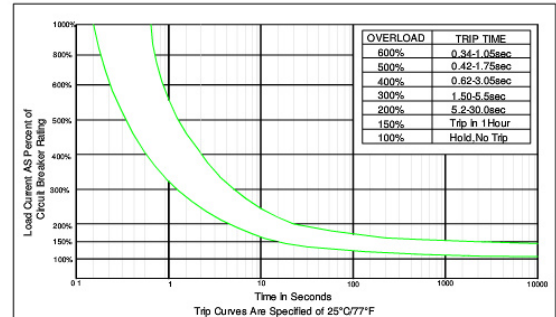
**•Calibration(at25°C)**

- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 5-30 sec Trip
- 300% of Rated Current: 1.5-5.0 sec Trip

**Order Guide**



**•F88 Series Trip Time Curves**



**•Ambient Temperature Correction Factor**

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

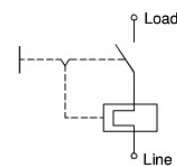
The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping. Please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 10A  
Ambient Temperature = 45°C  
Multiplication Factor = 0.85  
Recommended Rating = 10A/0.85=11.8A

**•Max. Internal Resistance**

Amp rating	Max resistance
3.0 - 5.0Amp	<0.225 Ohms
6.0 - 8.0Amp	<0.175 Ohm
9.0 - 12.0Amp	<0.125 Ohm
13.0 - 16.0Amp	<0.050 Ohm

**•Internal connection diagram**





# 88D Series Plugs with overload protectors



•Technical data

•Plugs

- Rating 15A 125VAC
- Insulation Resistance >100MOHM (DC 500V)
- Dielectric Strength > 2,000VAC/min.
- Housing Material Thermoplastic 94V-2 ~ 94V-0

•Protectors

- Rating 3A~15A 125/250VAC
- Insulation Resistance >100MOHM (DC 500V)
- Dielectric Strength > 1,500VAC/min.
- Interrupting Capacity 125/250VAC x 1,000A(UL 1077)
- Breaking Capacity 6 times rated current
  - Insulation co-ordination Rated impulse withstand voltage 2.5kV

•Mechanical/Environmental Data

- Operating Ambient Temperature: -10°C to +60°C
- Termination: 250"(6.35mm) quick connects or solder terminals
- Mounting: Various options. See Ordering Information and drawings
- Compliance with Rohs

The product accords with the requirement of ROHS (2011/65/EU) Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)

•Compliance with REACH, PAHS, PH1, PH2, PH3

•Typical applications

Transformers, Motors, Battery chargers, Power supplies, appliances, extra low voltage systems, machinery.

•Calibration(at25°C)

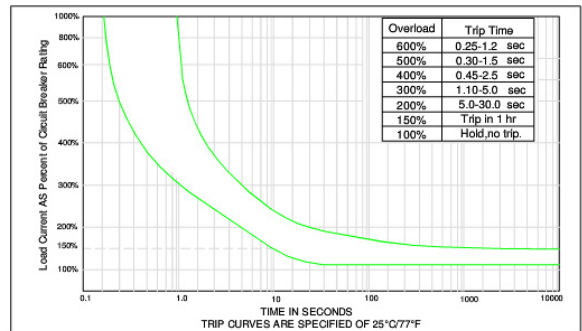
- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 5-30 sec Trip
- 300% of Rated Current: 1.5-5.0 sec Trip

•Approval

Approval & File No.	Rated current	Rated voltage
UL E305186 vol.1	15A	125VAC
cUL E305186 vol.2	3A-16A	125/250VAC

•How to Order

<b>88D</b> Series no.	<b>-XX-</b> Protectors Rating Amp	<b>1</b> Operating	<b>A</b> Cover & bracket	<b>B</b> Protectors Button type	<b>1</b> Plugs Terminal type
<p><b>3A.....15A</b></p> <p>1 =Plug(C14)+protectors 2 =Plug(C14)+protectors+switch</p> <p>A =Snap IN B =Screw</p> <p>B =Black button 1 =Black button print Amp</p>					
1	2	3	4	5	6



•Ambient Temperature Correction Factor

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, Please multiply the circuit breaker current ratings by the derating factor shown below.

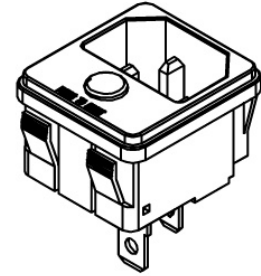
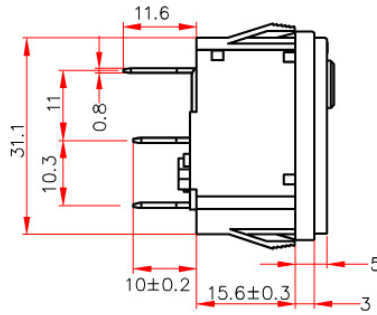
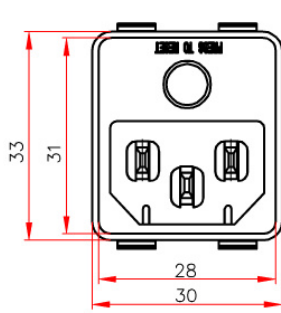
Example : Normal Continuous Current = 50A  
 Ambient Temperature = 45°C  
 Multiplication Factor = 0.85  
 Recommended Rating= 50A\*0.85=58.8A

•Max. Internal Resistance

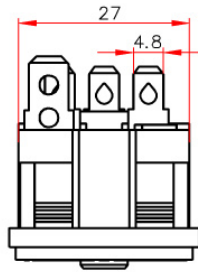
Amp rating	Max resistance
3.0 - 5.0Amp	<0.225 Ohms
6.0 - 8.0Amp	<0.175 Ohm
9.0 - 12.0Amp	<0.125 Ohm
13.0 - 16.0Amp	<0.050 Ohm

\* The specification subject to change without notice. The drawing is for reference only.

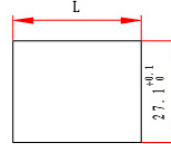




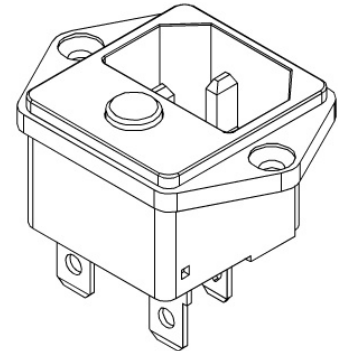
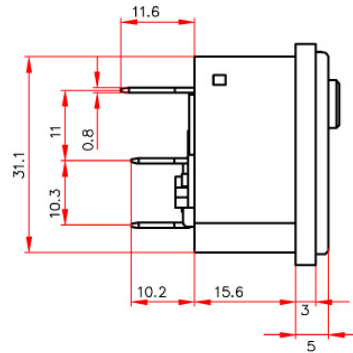
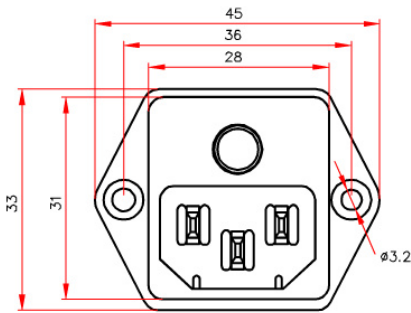
88D-15-1AB1



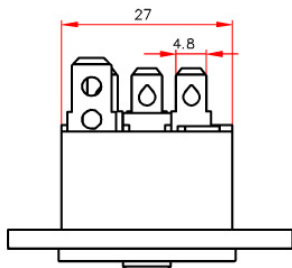
Panel Hole Size  
(For Reference)



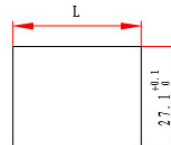
L	Panel Thickness
34.0~34.2	0.75-1.25
34.2~34.4	1.25-2.00
34.4~34.6	2.00-3.00



88D-15-1BB1



Panel Hole Size  
(For Reference)



L	Panel Thickness
34.0~34.2	0.75-1.25
34.2~34.4	1.25-2.00
34.4~34.6	2.00-3.00

\* The specification subject to change without notice. The drawing is for reference only.



# 97 Series Thermal Circuit Breaker

## Single Pole; Auto- Reset

### •Technical data

- Current rating range 0.8~15A
- Input voltage rating 125/250VAC; 12/24VDC
- Interrupting Capacity 125/250VAC x 200A (UL1077)
- Interrupting capacity Icn 0.8A...1.0A 6x In; AC max 6A  
1.1A...1.5A 6x In; AC max 9A  
1.6A...15A 8x In; AC max 45A
- Reset time: 200% of rating current within 50 seconds  
150% of rating current within 5 minutes
- Dielectric Strength > 1,500VAC/min.
- Insulation Resistance >100MOHM (DC 500V)
- Degree of protection Terminal area IP00; operating area IP30

### •Mechanical/Environmental Data

- Operating Ambient Temperature: -10°C to +60°C
- Termination: 110"(2.8mm) quick connects or solder terminals
- Mounting: Various options. See Ordering Information and drawings

### •Compliance with Rohs

The product accords with the requirement of ROHS( 2011/65/EU)  
Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)

### •Compliance with REACH, PAHS, PH1, PH2, PH3

### •Typical applications

Transforms, Motors, Battery chargers, Power supplies, appliances, extra low voltage systems, machinery.

### •Calibration (at25°C)

- Rated: 0.8~5A
- 100% of Rated Current: Hold , No Trip
  - 150% of Rated Current: Trip Within 1 Hour.
  - 200% of Rated Current: 2.0-35 sec Trip
  - 300% of Rated Current: 0.6-3.5 sec Trip

- Rated: 6~15A
- 100% of Rated Current: Hold , No Trip
  - 135% of Rated Current: Trip Within 1 Hour.
  - 200% of Rated Current: 3.0-50 sec Trip
  - 300% of Rated Current: 0.85-5 sec Trip

### •Approval

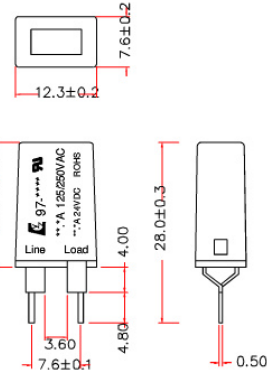
- Approval & File No. Rated current Rated voltage
- CUL UL 0.8-12A 125/250VAC; 12/24VDC

### •Order Guide

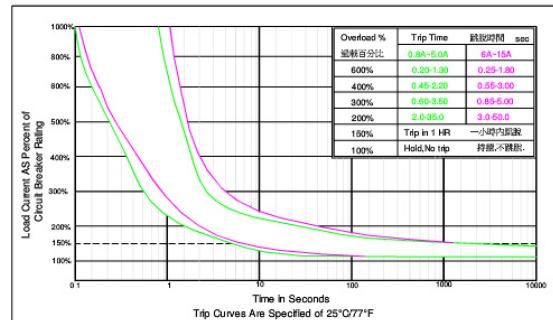
**97 - 1000 - A**

Series No      Amp Rating      Terminal Type

0080=0.8A	0400=4.0A	<b>A = P.C.B. 0.5X0.9mm</b>  <b>B = 2.8mm S.Q. Terminal</b> 
0100=1.0A	0500=5.0A	
0125=1.25A	0600=6.0A	
0150=1.5A	0700=7.0A	
0175=1.75A	0800=8.0A	
0200=2.0A	0900=9.0A	
0250=2.5A	1000=10.0A	
0275=2.75A	1200=12.0A	
0300=3.0A	1300=13.0A	
0350=3.5A	1500=15.0A	



### •97 Series 0.8-15A Trip Time Curves



### •Ambient Temperature Correction Factor

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

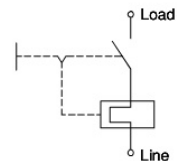
The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping. Please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 10A  
Ambient Temperature = 45°C  
Multiplication Factor = 0.85  
Recommended Rating= 10A/0.85=11.8A  
Select the Nearest Rating = 12A

### •Max. Internal Resistance

Amp rating	Max resistance
0.8-1.5 Amp	<0.65 ohm
1.6-2.0 Amp	<0.15 ohm
2.1-2.9 Amp	<0.1 ohm
3.0-4.0 Amp	<0.075 ohm
4.1-6.0 Amp	<0.06 ohm
6.1-8.0 Amp	<0.05 ohm
8.1-10.0 Amp	<0.045 ohm
11.0-15.0 Amp	<0.040 ohm

### •Internal connection diagram





# 88AR Thermal Circuit Breaker

## Single Pole Auto-Reset

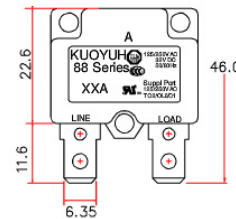
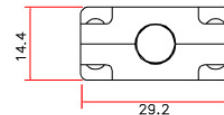
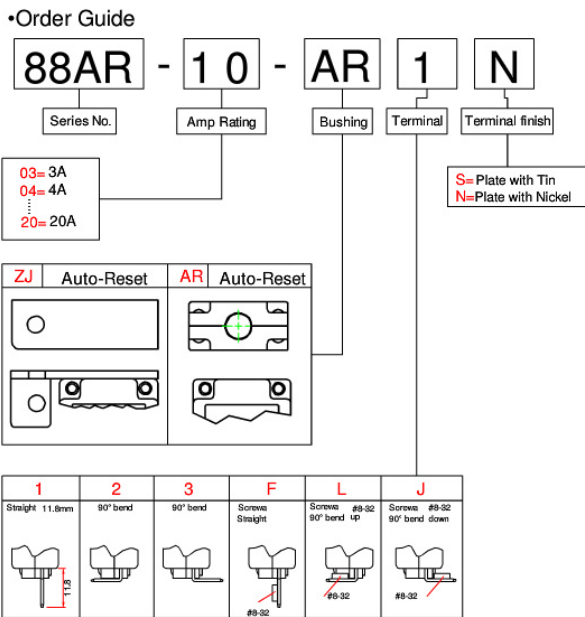
- **Technical data**
- Current rating range 3~30A
- Input voltage rating 125/250VAC; 32/50VDC
- Contact Endurance 125Vac X150% of rated current >500 cycles  
125Vac X200% of rated current >200 cycles
- Insulation Resistance >100MOHM (DC 500V)
- Dielectric Strength > 1,500VAC/min.
- Degree of protection Terminal area IP00, operating area IP40
- **Mechanical/Environmental Data**
- Operating Ambient Temperature: -10°C to +60°C
- Termination: 110"(2.8mm) quick connects or solder terminals
- Mounting: Various options. See Ordering Information and drawings

- **Compliance with Rohs**  
The product accords with the requirement of ROHS( 2011/65/EU)  
Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)
- **Compliance with REACH, PAHS, PH1, PH2, PH3**

- **Typical applications**  
Transformers, Motors, Battery chargers, Power supplies,

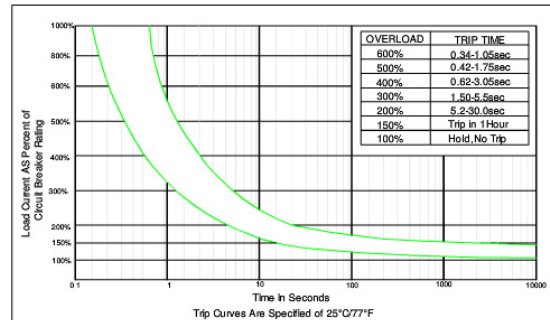
- **Calibration(at25°C)**
- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 5-30 sec Trip
- 300% of Rated Current: 1.5-5.0 sec Trip

- **Approval**
- Approval & File No. Rated current Rated voltage
- CUL UL E155159 3-20A 24VDC
- TUV SUD B15 09 58611 007 3-20A 125/250VAC; 32VDC



\* Dimension in mm:

• **88AR Series 3A-20A Trip Time Curves**



• **Ambient Temperature Correction Factor**

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

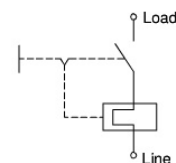
The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 10A  
Ambient Temperature = 45°C  
Multiplication Factor = 0.85  
Recommended Rating = 10A/0.85=11.8A  
Select the Nearest Rating = 12A

• **Max. Internal Resistance**

Max. Internal Resistance	
Amp rating	Max resistance
3.0 - 5.0Amp	<0.225 Ohms
6.0 - 8.0Amp	<0.175 Ohm
9.0 - 12.0Amp	<0.125 Ohm
13.0 - 16.0Amp	<0.050 Ohm
17.0 - 20.0Amp	<0.040 Ohm

• **Internal connection diagram**



\* The specification subject to change without notice. The drawing is for reference only.





# 98AR Thermal Circuit Breaker

## Single Pole Auto-Reset



- **Technical data**
- Current rating range 3~50A
- Input voltage rating 125/250VAC; 32VDC
- Contact Endurance 125Vac X150% of rated current >500 cycles  
125Vac X200% of rated current >200 cycles
- Insulation Resistance >100MOHM (DC 500V)
- Dielectric Strength > 1,500VAC/min.
- Degree of protection Terminal area IP00, operating area IP40
- **Mechanical/Environmental Data**
- Operating Ambient Temperature: -10°C to +60°C
- Termination: 110"(2.8mm) quick connects or solder terminals
- Mounting: Various options. See Ordering Information and drawings
- **Compliance with Rohs**  
The product accords with the requirement of ROHS( 2011/65/EU)  
Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)
- **Compliance with REACH, PAHS, PH1, PH2, PH3**
- **Typical applications**  
Transformers, Motors, Battery chargers, Power supplies,

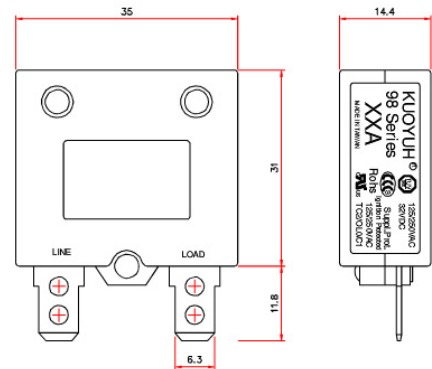
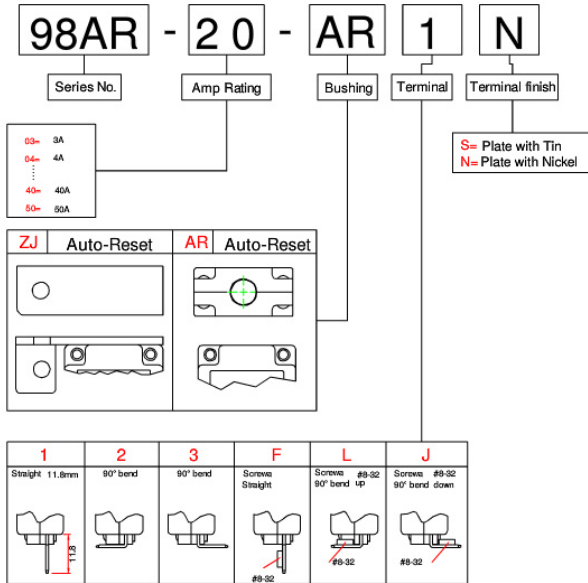
### • Calibration(at25°C)

- 100% of Rated Current: Hold, No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 5-30 sec Trip
- 300% of Rated Current: 1.5-5.0 sec Trip

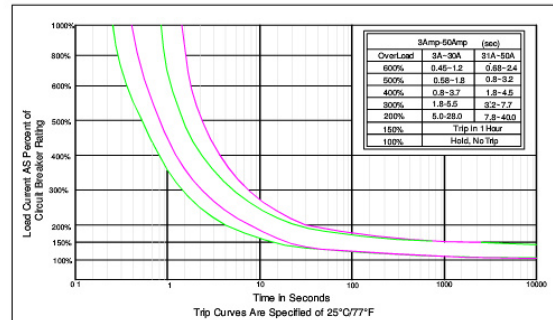
### • Approval

Approval & File No.	Rated current	Rated voltage
• CUL UL E155159	3-50A	12VDC
• TUV SUD B15 09 58611 007	3-30A	125/250VAC; 32VDC

### • Order Guide



### • 98AR 3A-50A Trip Time Curves



### • Ambient Temperature Correction Factor

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

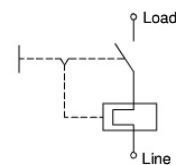
The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping. Please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 10A  
Ambient Temperature = 45°C  
Multiplication Factor = 0.85  
Recommended Rating= 10A/0.85=11.8A  
Select the Nearest Rating = 12A

### • Max. Internal Resistance

Amp rating	Max resistance
3-5 A	<0.225 Ohms
6-8 A	<0.175 Ohms
9-11 A	<0.125 Ohms
12-13 A	<0.050 Ohms
14-17 A	<0.040 Ohms
18-24 A	<0.030 Ohms
25-35 A	< 0.020 Ohms
36-50 A	< 0.010 Ohms

### • Internal connection diagram



\* The specification subject to change without notice. The drawing is for reference only.



# 98HAR Thermal Circuit Breaker

## Single Pole Auto-Reset

### •Technical data

- Current rating range 40~80A
- Input voltage rating 125/250VAC; 32/50VDC
- Contact Endurance 125Vac X150% of rated current >500 cycles  
125Vac X200% of rated current >200 cycles

- Insulation Resistance >100MOHM (DC 500V)
- Dielectric Strength > 1,500VAC/min.
- Degree of protection Terminal area IP00.

### •Mechanical/Environmental Data

- Operating Ambient Temperature: -10°C to +60°C
- Mounting: Various options. See Ordering Information and drawings
- Compliance with Rohs

The product accords with the requirement of ROHS( 2011/65/EU)  
Contacts use Exempted item of RoHS Directive 2010/571/EU 8(a)

### •Compliance with REACH, PAHS, PH1, PH2, PH3

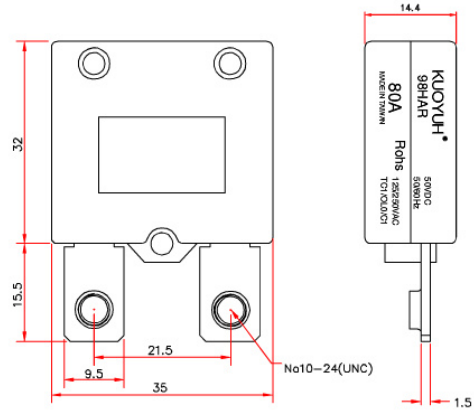
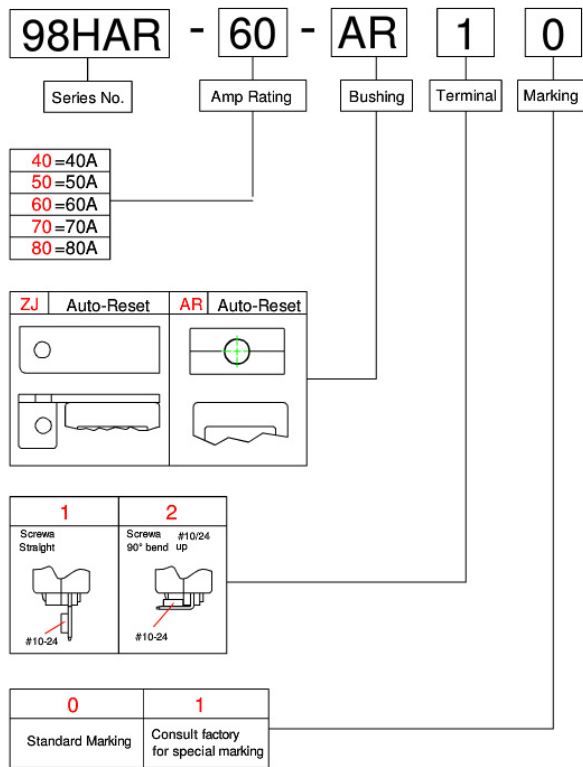
### •Typical applications

Transformers, Motors, Battery chargers, Power supplies,

### •Calibration(at25°C)

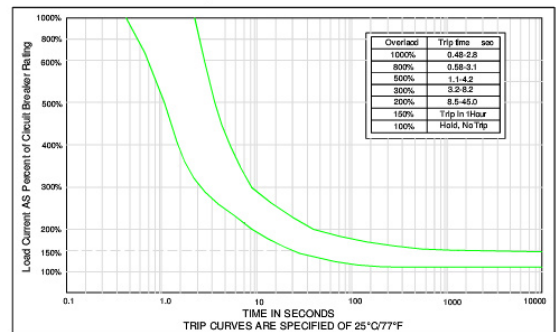
- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 5-30 sec Trip
- 300% of Rated Current: 1.5-5.0 sec Trip

### •Order Guide



\* Dimension in mm:  
Standard Marking

### •98HAR 40~80A Trip Curves



### •Ambient Temperature Correction Factor

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

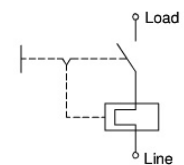
The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, Please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 50A  
Ambient Temperature = 45°C  
Multiplication Factor = 0.85  
Recommended Rating= 50A\*0.85=58.8A  
Select the Nearest Rating = 60A

### •Max. Internal Resistance

Amp rating	Max resistance
3-5 A	<0.225 Ohms
6-8 A	<0.175 Ohms
9-11 A	<0.125 Ohms
12-13 A	<0.050 Ohms
14-17 A	<0.040 Ohms
18-24 A	<0.030 Ohms
25-35 A	< 0.020 Ohms
36-50 A	< 0.010 Ohms

### •Internal connection diagram



\* The specification subject to change without notice. The drawing is for reference only.



# AR SERIES CIRCUIT PROTECTION

Single Pole; Auto-reset, Modified-reset, Manual-reset



**•Technical data**

- Current rating range 3~50A
- Input voltage rating 12/24 VDC; 14/28VDC
- Compliances SAE J553
- Contact Endurance 125Vac X150% of rated current >500 cycles  
125Vac X200% of rated current >200 cycles
- Insulation Resistance >100MOHM (DC 500V)
- Dielectric Strength > 1,500VAC/min.
- Breaking Capacity 4 times rated current
- Automotive Type Auto- Reset; 12/24VDC Automotive Type I
- Automotive Type Modified- Reset; 12VDC Automotive Type II
- Automotive Type Manual- Reset; 12VDC Automotive Type III
- Materials UL 94V-0 Thermoplastic body, thermoset for Type III buttons.



**•Mechanical/Environmental Data**

- Operating Ambient Temperature: -10°C to +60°C
- Storage Temperature Rating: -40°C to +100°C.
- Terminal Type: #10-32 thread and 0.25" quick-connect options available

**•Typical applications**

Trolling motors, Battery chargers, trucks, buses, RV's.

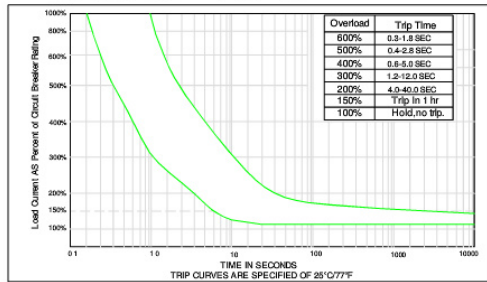
**•Approval**

- Approval & File No. Rated current Rated voltage
- CUL ULE317794 3-50A 125/250VAC; 50VDC  
( For Plastic Cover)

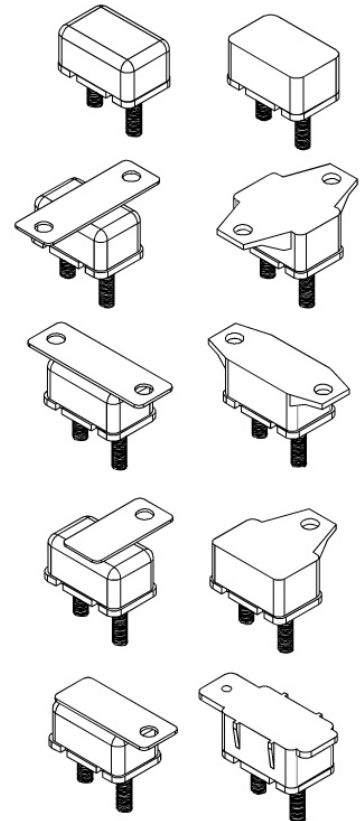
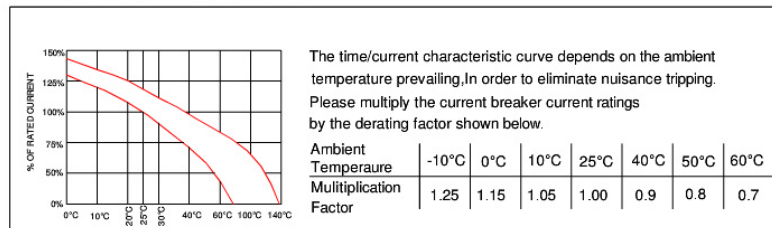
**•Calibration(at25°C)**

- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 4.0-40.0 SEC Trip
- 300% of Rated Current: 1.2-12.0 SEC Trip

**•AR Series 3~50A Trip Curves**



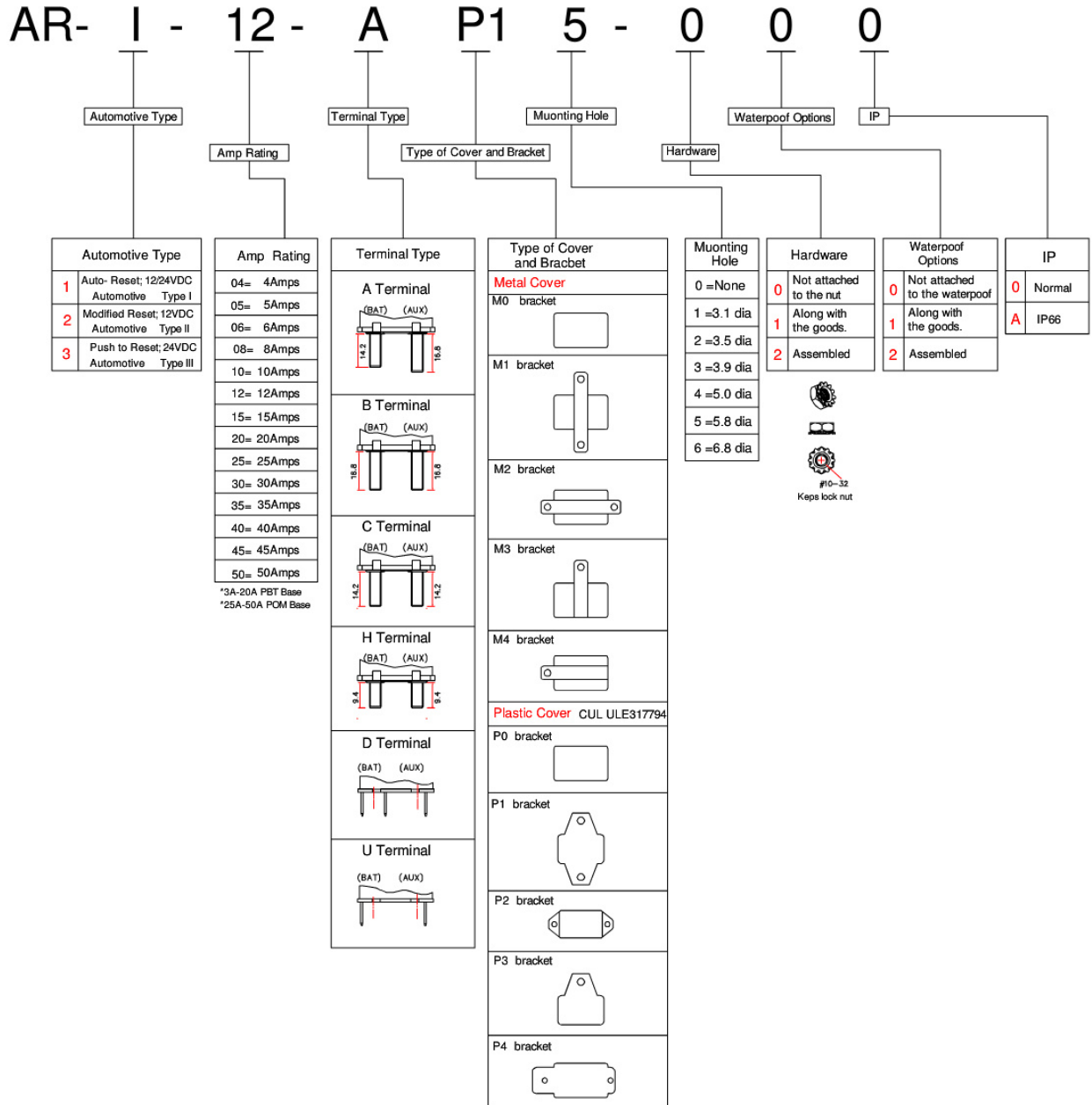
**• Temperature Derating Curves**



\* The specification subject to change without notice. The drawing is for reference only.



## AR Series Circuit Breaker Order Guide



\* The specification subject to change without notice. The drawing is for reference only.



# AR2 SERIES CIRCUIT PROTECTION

## Single Pole Auto-Reset

**•Technical data**

- Current rating range 3~20A
- Input voltage rating 12/24 VDC; 14/28VDC
- Compliances SAE J553
- Contact Endurance 125Vac X150% of rated current >500 cycles  
125Vac X200% of rated current >200 cycles
- Insulation Resistance >100MOHM (DC 500V)
- Dielectric Strength > 1,500VAC/min.
- Breaking Capacity 4 times rated current
- Automotive Type Auto- Reset; 12VDC Automotive Type I
- Reset Time Within 60 SEC



**•Mechanical/Environmental Data**

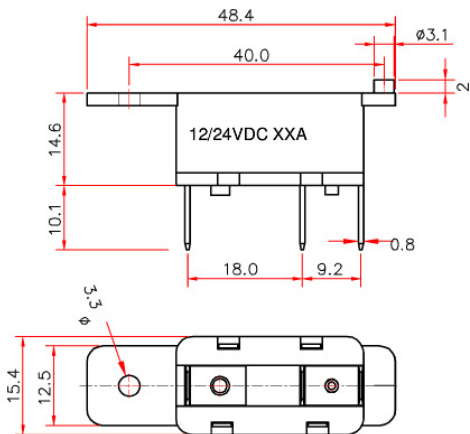
- Operating Ambient Temperature: -10°C to +60°C
- Storage Temperature Rating: -40°C to +100°C.
- Termination: 250"(6.3mm) quick connects or solder terminals

**•Typical applications**

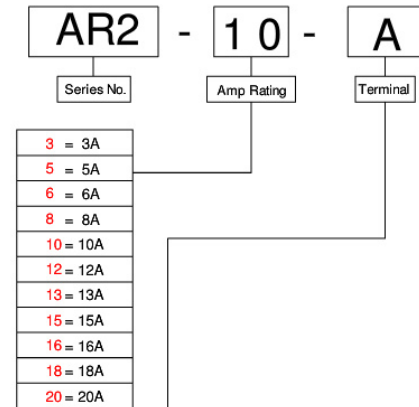
Battery chargers, trucks, buses, RV's, trolling motors, etc.

**•Calibration(at25°C)**

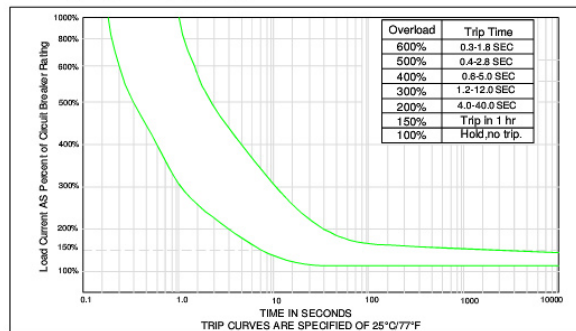
- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 4.0-40.0 SEC Trip
- 300% of Rated Current: 1.2-12.0 SEC Trip



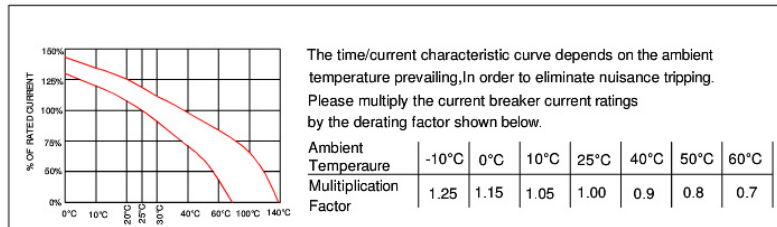
**•AR2 Order Guide**



**•AR2 3~20A Trip Curves**



**•Temperature Derating Curves**



\* The specification subject to change without notice. The drawing is for reference only.



# AR6 SERIES CIRCUIT PROTECTION

## Single Pole Auto- Reset

**•Technical data**

- Current rating range 3~30A
- Input voltage rating 12/24 VDC
- Compliances SAE J553
- Contact Endurance 125Vac X150% of rated current >500 cycles  
125Vac X200% of rated current >200 cycles
- Insulation Resistance >100MOHM (DC 500V)
- Dielectric Strength > 1,500VAC/min.
- Breaking Capacity 4 times rated current
- Automotive Type Auto- Reset; 12VDC Automotive Type I
- Reset Time Within 60 SEC

**•Mechanical/Environmental Data**

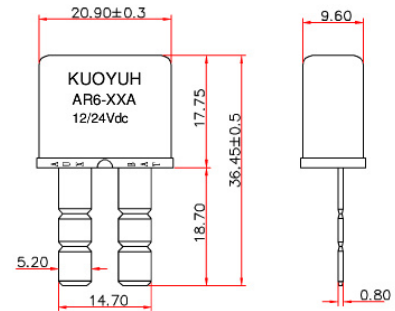
- Operating Ambient Temperature: -10°C to +60°C
- Storage Temperature Rating: -40°C to +100°C.
- Termination: 250"(6.3mm) quick connects or solder terminals

**•Typical applications**

Battery chargers, trucks, buses, RV's, trolling motors, etc.

**•Calibration(at25°C)**

- 100% of Rated Current: Hold , No Trip
- 150% of Rated Current: Trip Within 1 Hour.
- 200% of Rated Current: 5-25 sec Trip
- 300% of Rated Current: 1.5-5 sec Trip

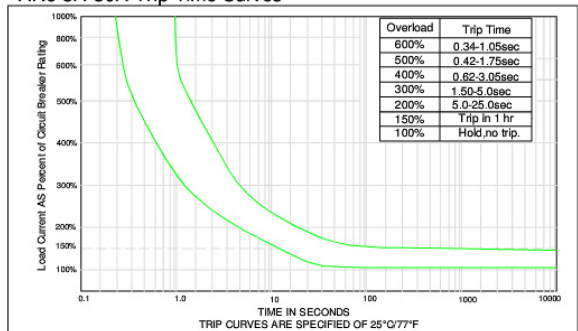


**•AR6 Order Guide**

**AR6** -**XXX** -**A** -**C**  
 Series no. Rating Amp Case Type Terminal Type

025= 2.5 Amp	A=Matel(AL)	A=7.3±0.5
050= 5 Amp		
075= 7.5 Amp	B=12.5±0.5	C=18.7±0.5
080= 8 Amp		
100= 10 Amp		
125= 12.5 Amp	C=18.7±0.5	
150= 15 Amp		
175= 17.5 Amp		
200= 20 Amp		
225= 22.5 Amp		
250= 25 Amp		
300= 30 Amp		

**•AR6 3A-30A Trip Time Curves**



**•Ambient Temperature Correction Factor**

Ambient temperature	-10°C	0°C	10°C	25°C	35°C	40°C	50°C	60°C
Multiplication factor	*1.30	*1.20	*1.10	1.00	*0.94	*0.85	*0.73	*0.68

The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping. Please multiply the circuit breaker current ratings by the derating factor shown below.

Example : Normal Continuous Current = 50A  
 Ambient Temperature = 45°C  
 Multiplication Factor = 0.85  
 Recommended Rating= 50A\*0.85=58.8A



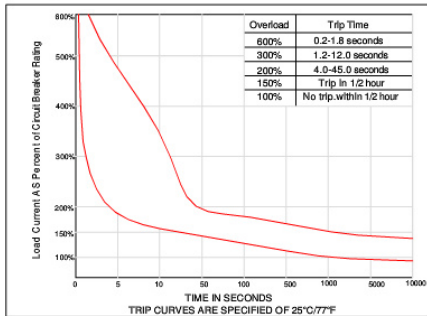
# 102 SERIES CIRCUIT PROTECTION

## Manual Reset (Type III)/ Auto Reset (Type I) Single Pole Thermal Type Breakers

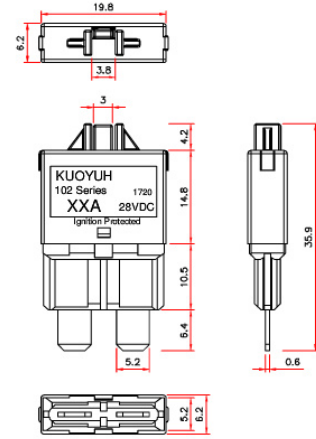
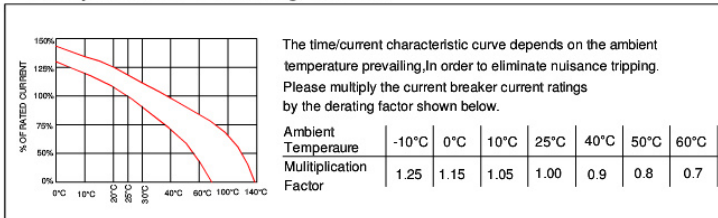
### SPECIFICATIONS

- Rating: 5-30A, 28VDC.
- Interrupt Rating: 2,000A / 28VDC.
- Operating Temperature Rating: -30°C to 75°C
- Storage Temperature Rating: -30°C to 105°C
- Materials: UL-Rated 94V-0 thermoplastic body.  
Tin-plated copper alloy terminals.
- Termination: 5.2mm wide blades compatible with  
ATC type fuse blocks.
- Marking: Cover is color-coded to amperage ratings.
- Compliances: SAEJ553; SAEJ1171
- Consult factory for trip time curves.

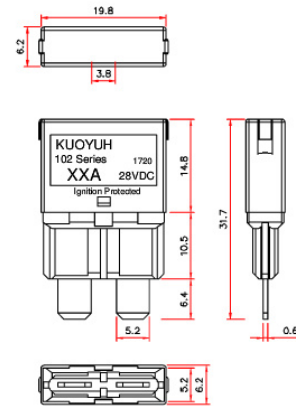
### • Trip Time Curves



### • Temperature Derating Curves



Manual Reset (Type III)  
\* Dimension in mm:



Auto Reset (Type I)  
\* Dimension in mm:

### • Order Guide

Series Rating Operation  
102 100 M

M= Type III (Manual Reset)  
A= Type I (Auto Reset)

- 050 = 5A=LT. Brown
- 060 = 6A=Moss Green
- 075 = 7.5A=Brown
- 100 = 10A=Red
- 150 = 15A=Blue
- 200 = 20A=Yellow
- 250 = 25A=White
- 300 = 30A=Green

\* The specification subject to change without notice. The drawing is for reference only.



# KUOYUH®

## 16 Series Thermal Circuit Breaker

Hi Amp ; Single Pole

• Technical data

Rating: 40-200A, 32VDC.

Interrupt Rating: 2,000A / 32VDC.

Operating Temperature Rating: -30°C to 80°C

Storage Temperature Rating: -30°C to 140°C

Materials: UL-Rated 94V-0 Thermosetting plastics body.  
Nickel-plated copper alloy stud.

Insulation Resistance: 100M, 500VDC

Dielectric Strength: 1800V 1 minute

• Trip Time

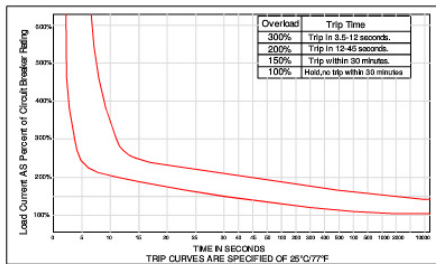
100% of rated current: Hold, no trip within 30 minutes.

150% of rated current: Trip within 30 minutes.

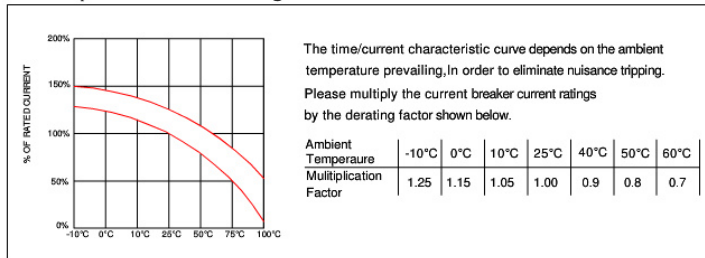
200% of rated current: Trip in 12-45 seconds.

300% of rated current: Trip in 3.5-12 seconds.

• Trip Time Curves



• Temperature Derating Curves



Surface Mount

Panel Mount



16-8F=Type III+Switch (witchable/Manua)



16-8P=Type III+Switch (witchable/Manua)



16-3F=Type III (Manual Reset)



16-3P=Type III (Manual Reset)



16-1F=Type I (Auto Reset)



16-1P=Type I (Auto Reset)

16-XX-XXX

- 040= 40A
- 050= 50A
- 060= 60A
- 070= 70A
- 080= 80A
- 090= 90A
- 100=100A
- 110=110A
- 120=120A
- 130=130A
- 140=140A
- 150=150A
- 180=180A
- 200=200A

F=Surface Mount  
P=Panel Mount


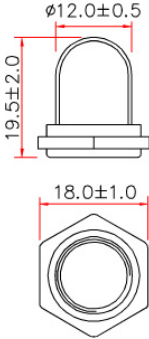

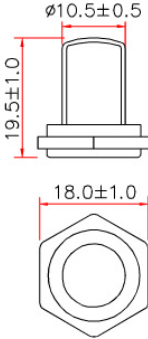

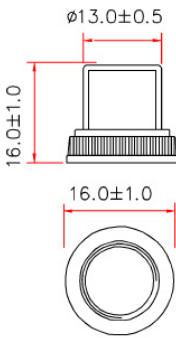

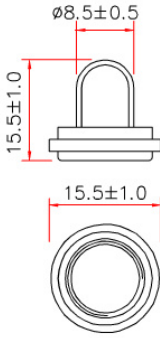

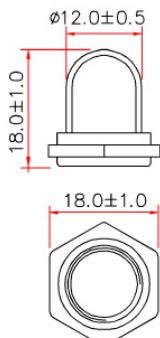

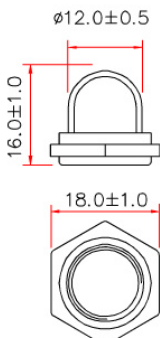

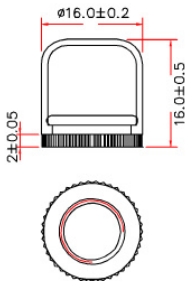
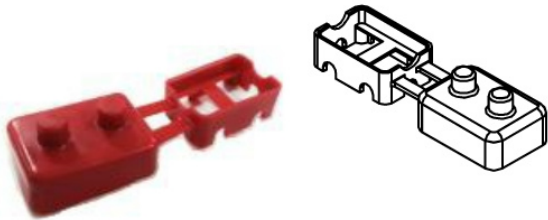
- 1=Type I (Auto Reset)
- 3=Type III (Manual Reset)
- 8=Type III+Switch (witchable/Manua)

\* The specification subject to change without notice. The drawing is for reference only.



ATTACHMENT

Waterproof Type

<p>W-R-1=M11xP1.0 Clean W-R-2=M12xP1.0 Clean W-R-7=7/16"-28t Clean</p>  	<p>W-M3=3/8"-27t Clean For 3/8"-27T only Font magnifier function</p>  
<p>W-F-11=M11xP1.0 Clean W-F-12=M12xP1.0 Clean W-F-38=3/8"-27t Clean W-F-7=7/16"-28t Clean</p>  	<p>W-U-3B=3/8"-27t Black W-U-3C=3/8"-27t Clean</p>  
<p>W-R-V11=M11xP1.0 Clean M11xP1.0 only</p>  	<p>W-T11=M11xP1.0 Clean For 88 Series only</p>  
<p>W-C-10=M10xP1.0 Clean (88A Series only)</p>  	<p>W-HB=Black for AR series W-HR=Recl for AR series W-HW=White for AR series</p> <p>SHORT STOP COVER</p> 

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ATTACHMENT

Mounting Nut

Nameplate

<p><b>Plastic</b>  <b>D-P1</b> M11*P1.0  <b>D-P2</b> M12*P1.0  <b>D-P3</b> 3/8"-27T</p> <p><b>Integrated Knurl nut</b></p>	<p><b>F-B1</b> M11*P1.0 Black plate  <b>F-B2</b> M12*P1.0 Black plate  <b>F-W1</b> M11*P1.0 White plate  <b>F-W2</b> M12*P1.0 White plate</p>
<p><b>Plastic</b>  <b>D-Q1</b> M11*P1.0  <b>D-Q2</b> M12*P1.0  <b>D-Q3</b> 3/8"-27T</p> <p><b>Knurl nut</b></p>	<p><b>F-A1</b> M11*P1.0 Black plate</p>
<p><b>Metal (ZnAL Alloys)</b>  <b>988-D-Z11</b> M11*P1.0  <b>988-D-Z12</b> M12*P1.0  <b>988-D-Z38</b> 3/8"-27T  <b>988-D-Z10</b> M10*P1.0  <b>988-D-Z716</b> 7/16"-28T</p> <p><b>Hexnut</b></p>	<p><b>F-S1</b> M11*P1.0 Black plate  <b>F-S2</b> M12*P1.0 Black plate  <b>F-X1</b> M11*P1.0 White plate  <b>F-X2</b> M12*P1.0 White plate</p>
<p><b>Metal</b>  <b>D-A1</b> M11*P1.0  <b>D-A2</b> M12*P1.0</p> <p><b>Knurl nut</b></p>	<p><b>F-L1</b> M11*P1.0 Black plate (Waterproof only)  <b>F-L2</b> M12*P1.0 Black plate</p>
<p><b>Metal</b>  <b>988-D-B11</b> M11*P1.0  <b>988-D-B12</b> M12*P1.0</p> <p><b>Hexnut</b></p>	<p><b>F-B3</b> 3/8"-27T Black plate          For 3/8"-27T only</p>
<p><b>Screw</b></p> <p><b>#8-32</b>  </p> <p><b>#10-24</b>  </p> <p><b>#8-32 Keps lock nut (for AR series)</b>  </p>	<p><b>D-B8</b> M8*P0.75 (91 series only)  </p> <p><b>F-08B</b> M8*P0.75 Black plate (91 series only)  </p>

\* The specification subject to change without notice. The drawing is for reference only.

