

# BM SERIES THERMAL PROTECTOR



**BTK**  
BTK CO., LTD.



**THE BTK MINIATURE PROTECTOR WILL PROVIDE BEST SOLUTION FOR OVER - TEMPERATURE & OVER - CURRENT PROTECTION WITH THE COMPACT DESIGN & ATTRACTIVE PRICE.**

**THERMAL PROTECTOR  
HOW BM-1 PROTECTS AGAINST  
OVERHEATING & OVERCURRENT?**

**DRAWING 1**

THE CURRENT START TO FLOW THROUGH THE ARROW DIRECTION LEAD CONNECTION - CAN CRIMP TERMINAL - BIMETAL DISC - MATCHING CONTACT



**DRAWING 2**

WHEN THE CURRENT OR TEMPERATURE, THE HEAT IS GENERATED OR TRANSFERRED TO BIMETAL DISC. THE DISC SNAPS OPEN AT CALIBRATED OPEN - TEMPERATURE



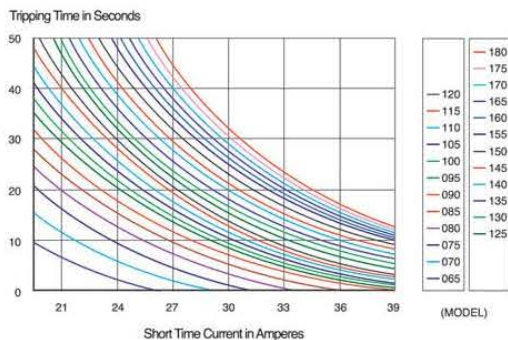
**DRAWING 3**

THE DISC SNAPS CLOSED WHEN THE DISC COOLS DOWN UP TO THE RESET - TEMPERATURE



**THERMAL PROTECTOR  
PERFORMANCE CURVE**

**BM-1 SHORT TIME CURVE**



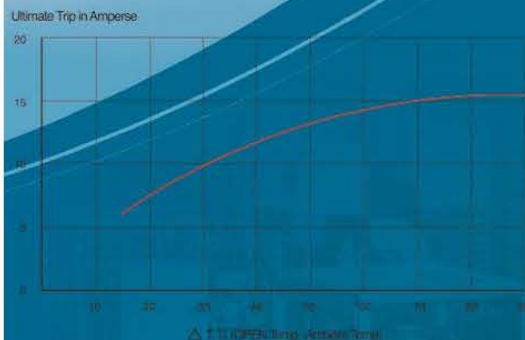
**MAIN APPLICATIONS**

- ELECTRIC MOTOR & SOLENOID
- SOLENOID
- SHADED POLE MOTOR
- PERMANENT SPLIT CAPACITOR MOTOR
- OTHER DC MOTOR
- RECESSED LIGHTING FIXTURE
- TRANSFORMER
- LIGHTING BALLAST
- HID BALLAST
- HEATING PANEL / MAT
- MEDICAL HEATING PACK / MAT
- STONE BED
- BATTERY PACK
- ELECTRIC CHARGER

**MAIN CHARACTERISTICS WHY BM-1?**

- SMALL & COMPACT DESIGN
- NORMALLY CLOSED CONTACT
- QUICK RESPONSE SENSITIVITY ON CURRENT & TEMPERATURE
- EXCELLENT LONG TERM TEMPERATURE PERFORMANCE
- THE CLOSED STEEL CAN SUITABLE FOR MANY IMPREGNATION WITH THE WINDING
- WIDE VARIATION OF WIRE LEAD & INSULATION SLEEVES
- TWO SELECTIONS OF TERMINATIONS(A/B TYPE)
- 100% TEMPERATURE CALIBRATED
- QUICK SWITCHING BY UNIQUE SNAP ACTION DESIGN
- VIBRATION PROOF IN THE FREQUENCY RANGE 10-60HZ

**BM-1 ULTIMATE TRIP CURVE**



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## THERMAL PROTECTOR BM-1

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- ⇒ High contact rating
- ⇒ High crushing strength
- ⇒ High temperature sensitivity
- ⇒ Slight current sensitive
- ⇒ Short reaction time



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### Description

BM-1 thermal protector is an electromechanical safety device, which provides complete protection to your equipments against over-heating, over-loading and mechanical malfunctions.

BM-1 thermal protector response determined by current sensitive. This property can be influenced by selection of different kind of bimetal material.

BM-1 thermal protector is available with blank terminals or connecting leads. Insulation of housing by sleeving available.

For use under vacuum conditions, please use the sealed version.

### Typical applications

BM-1 thermal protector are used principally in transformers, motors, solenoids, lighting ballasts, medical equipments and similar applications.

# THERMAL PROTECTOR BM-1

**BM-1**  
 BM-1 (BASIC MODEL)  
 BM-1W (HIGH RESISTANCE)  
 BM-1U (LOW RESISTANCE)  
 BM-1S (SELF HOLDING TYPE)

**130**  
 OPENING  
 TEMPERATURE

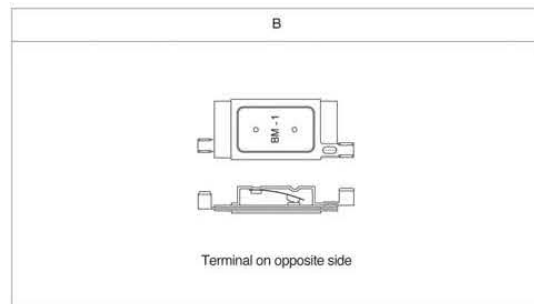
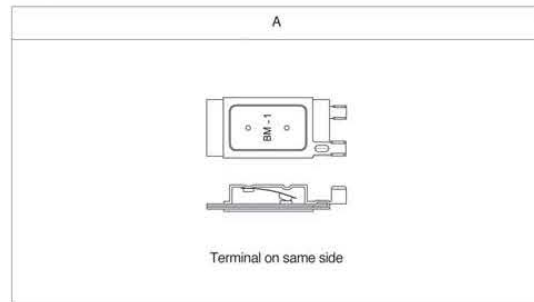
**A**  
 TERMINAL  
 CONFIGURATION

**L18**  
 WIRE LEAD  
 CHARACTERISTICS

NO.	CODE	OPEN (°C)	COLSE (°C)
1	030	30±5°C	(22±8°C)
2	035	35±5°C	(26±9°C)
3	040	40±5°C	(30±10°C)
4	045	45±5°C	(34±11°C)
5	050	50±5°C	(38±12°C)
6	055	55±5°C	(42±13°C)
7	060	60±5°C	(46±14°C)
8	065	65±5°C	(50±15°C)
9	070	70±5°C	(46±15°C)
10	075	75±5°C	(54±15°C)
11	080	80±5°C	(56±15°C)
12	085	85±5°C	(58±15°C)
13	090	90±5°C	(60±15°C)
14	095	95±5°C	(62±15°C)
15	100	100±5°C	(65±15°C)
16	105	105±5°C	(68±15°C)
17	110	110±5°C	(71±15°C)
18	115	115±5°C	(74±15°C)
19	120	120±5°C	(77±15°C)
20	125	125±5°C	(80±15°C)
21	130	130±5°C	(83±15°C)
22	135	135±5°C	(86±15°C)
23	140	140±5°C	(90±15°C)
24	145	145±5°C	(94±15°C)
25	150	150±5°C	(98±15°C)
26	155	155±5°C	(116±15°C)
27	160	160±5°C	(120±15°C)
28	165	165±5°C	(124±15°C)
29	170	170±5°C	(128±15°C)
30	175	175±6°C	(132±15°C)
31	180	180±6°C	(136±15°C)

CODE	WIRE
N	Without Wire
L16	AWG 16
L18	AWG 18
L20	AWG 20
L22	AWG 22
P0.5	φ 0.5mm Solid Wire
P0.8	φ 0.8mm Solid Wire
P1.0	φ 1.0mm Solid Wire

\* Close temperature is reference for the customer.

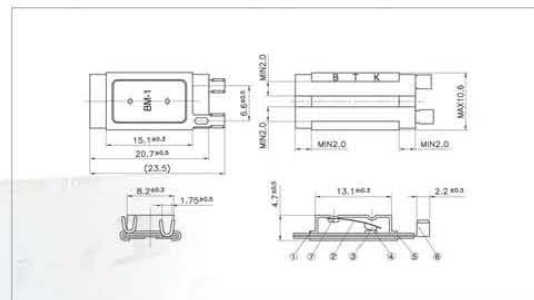


## THERMAL PROTECTOR LOOK AT INSIDE BM-1

NO.	PARTS	MATERIAL	REMARKS
1	CAN	STEEL	t=0.4, Nickel plated steel
2	BIMETAL	TRUFLEX & SUMITOMO	t=0.13
3	M.CONTACT	Ag-alloy, Cu, Fe CLAD	Trilayer, t=1.0, φ 2.3
4	S.CONTACT	Ag-alloy, Cu, Fe CLAD	Trilayer, t=0.61, 3.18 x 2.1
5	INSULATION	PETP	t=0.27, coated dry epoxy
6	PLATE	STEEL	t=0.5, Nickel plated steel
7	SLUG	PURE STEEL	t=0.95, φ 2.23, Nickel plated steel

## THERMAL PROTECTOR 10000 CYCLES RATING

- DC 16V - 20Amps (VDE, UL and CSA)
- AC 125V - 20Amps (VDE, UL and CSA)
- AC 250V - 8Amps (VDE, UL and CSA)
- AC 250V - 9Amps (10,000 Cycles - VDE only)
- AC 240V - 10Amps ( 3,000 Cycles - VDE only)



# THERMAL PROTECTOR BM-1S

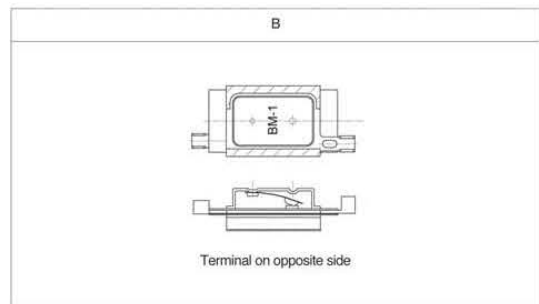
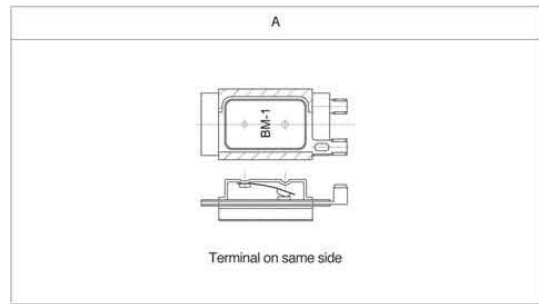


NO.	CODE	OPEN (°C)	COLSE (°C)
1	BM-1S-030A	30±5°C	(22±8°C)
2	BM-1S-035A	35±5°C	(26±9°C)
3	BM-1S-040A	40±5°C	(30±10°C)
4	BM-1S-045A	45±5°C	(34±11°C)
5	BM-1S-050A	50±5°C	(38±12°C)
6	BM-1S-055A	55±5°C	(42±13°C)
7	BM-1S-060A	60±5°C	(46±14°C)
8	BM-1S-065A	65±5°C	(50±15°C)
9	BM-1S-070A	70±5°C	(52±15°C)
10	BM-1S-075A	75±5°C	(54±15°C)
11	BM-1S-080A	80±5°C	(56±15°C)
12	BM-1S-085A	85±5°C	(58±15°C)
13	BM-1S-090A	90±5°C	(60±15°C)
14	BM-1S-095A	95±5°C	(62±15°C)
15	BM-1S-100A	100±5°C	(65±15°C)
16	BM-1S-105A	105±5°C	(68±15°C)
17	BM-1S-110A	110±5°C	(71±15°C)
18	BM-1S-115A	115±5°C	(74±15°C)
19	BM-1S-120A	120±5°C	(77±15°C)
20	BM-1S-125A	125±5°C	(80±15°C)
21	BM-1S-130A	130±5°C	(83±15°C)
22	BM-1S-135A	135±5°C	(86±15°C)
23	BM-1S-140A	140±5°C	(90±15°C)
24	BM-1S-145A	145±5°C	(94±15°C)
25	BM-1S-150A	150±5°C	(98±15°C)
26	BM-1S-155A	155±5°C	(116±15°C)
27	BM-1S-160A	160±5°C	(120±15°C)
28	BM-1S-165A	165±5°C	(124±15°C)
29	BM-1S-170A	170±5°C	(128±15°C)
30	BM-1S-175A	175±6°C	(132±15°C)
31	BM-1S-180A	180±6°C	(136±15°C)

\* Close temperature is reference for the customer.

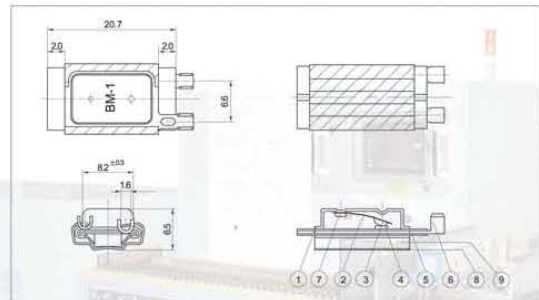
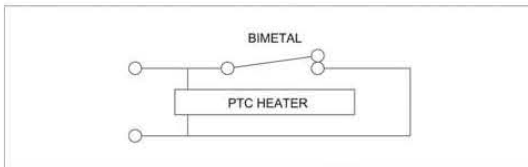


CODE	WIRE
N	Without Wire
L16	AWG 16
L18	AWG 18
L20	AWG 20
L22	AWG 22
P0.5	φ 0.5mm Solid Wire
P0.8	φ 0.8mm Solid Wire
P1.0	φ 1.0mm Solid Wire



## Description

Once activated in a over heating or over current condition, maintains its open state by PTC HEATER until power is removed. The reset of BM-1S, power must be removed for sufficient time to allow the BM-1S cool to below the close temperature.



# THERMAL PROTECTOR BM-1(E)



**BM-1**  
 BM-1 (BASIC MODEL)  
 BM-1W (HIGH RESISTANCE)  
 BM-1U (LOW RESISTANCE)  
 BM-1S (SELF HOLDING TYPE)

**130**  
 OPENING  
 TEMPERATURE

**A**  
 TERMINAL  
 CONFIGURATION

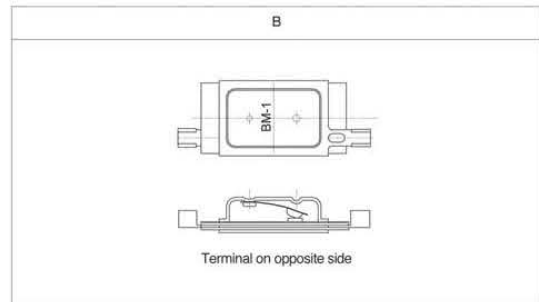
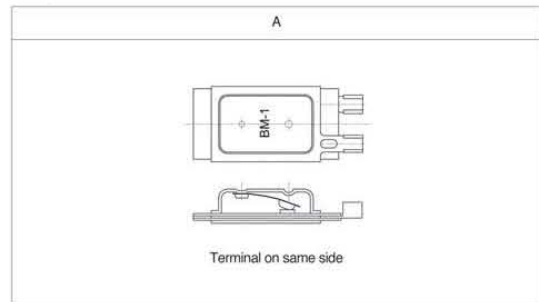
**L18**  
 WIRE LEAD  
 CHARACTERISTICS

**(E)**  
 TERMINAL  
 DISTANCE

NO.	CODE	OPEN (°C)	COLSE (°C)
1	BM-1-030A-E	30±5°C	(22±8°C)
2	BM-1-035A-E	35±5°C	(26±9°C)
3	BM-1-040A-E	40±5°C	(30±10°C)
4	BM-1-045A-E	45±5°C	(34±11°C)
5	BM-1-050A-E	50±5°C	(38±12°C)
6	BM-1-055A-E	55±5°C	(42±13°C)
7	BM-1-060A-E	60±5°C	(46±14°C)
8	BM-1-065A-E	65±5°C	(50±15°C)
9	BM-1-070A-E	70±5°C	(52±15°C)
10	BM-1-075A-E	75±5°C	(54±15°C)
11	BM-1-080A-E	80±5°C	(56±15°C)
12	BM-1-085A-E	85±5°C	(58±15°C)
13	BM-1-090A-E	90±5°C	(60±15°C)
14	BM-1-095A-E	95±5°C	(62±15°C)
15	BM-1-100A-E	100±5°C	(65±15°C)
16	BM-1-105A-E	105±5°C	(68±15°C)
17	BM-1-110A-E	110±5°C	(71±15°C)
18	BM-1-115A-E	115±5°C	(74±15°C)
19	BM-1-120A-E	120±5°C	(77±15°C)
20	BM-1-125A-E	125±5°C	(80±15°C)
21	BM-1-130A-E	130±5°C	(83±15°C)
22	BM-1-135A-E	135±5°C	(86±15°C)
23	BM-1-140A-E	140±5°C	(90±15°C)
24	BM-1-145A-E	145±5°C	(94±15°C)
25	BM-1-150A-E	150±5°C	(98±15°C)
26	BM-1-155A-E	155±5°C	(116±15°C)
27	BM-1-160A-E	160±5°C	(120±15°C)
28	BM-1-165A-E	165±5°C	(124±15°C)
29	BM-1-170A-E	170±5°C	(128±15°C)
30	BM-1-175A-E	175±6°C	(132±15°C)
31	BM-1-180A-E	180±6°C	(136±15°C)

\* Close temperature is reference for the customer.

CODE	WIRE
N	Without Wire
L16	AWG 16
L18	AWG 18
L20	AWG 20
L22	AWG 22
P0.5	∅ 0.5mm Solid Wire
P0.8	∅ 0.8mm Solid Wire
P1.0	∅ 1.0mm Solid Wire

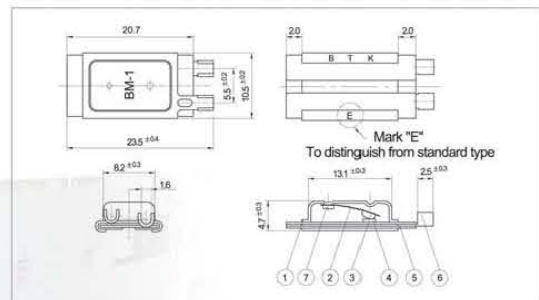


## Description

Terminal distance is narrow(6.6mm ⇒5.5mm) compare with BM-1 standard type.  
 All other specifications are same of BM-1 standard type.

## Typical applications

BM-1(E) thermal protector are used principally in transformers, motors, solenoids, lighting ballasts, medical equipments and similar applications.



**BTK** BTK Co., Ltd.



# THERMAL PROTECTOR BM-2



**BM-2**  
 BM-2 (BASIC MODEL)  
 BM-2W (HIGH RESISTANCE)  
 BM-2U (LOW RESISTANCE)  
 BM-2S (SELF HOLDING TYPE)

**130**  
 OPENING  
 TEMPERATURE

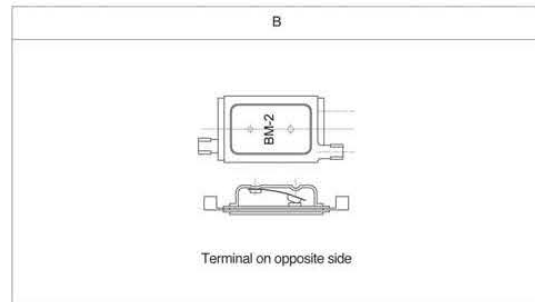
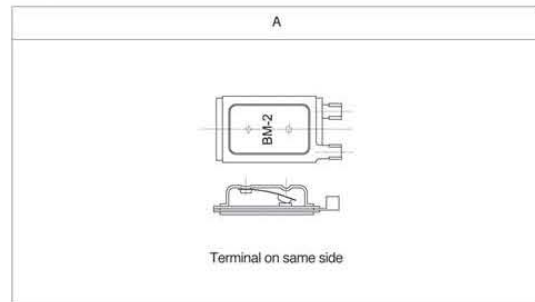
**A**  
 TERMINAL  
 CONFIGURATION

**L18**  
 WIRE LEAD  
 CHARACTERISTICS

NO.	CODE	OPEN (°C)	COLSE (°C)
1	BM-2-030A	30±5°C	(22±8°C)
2	BM-2-035A	35±5°C	(26±9°C)
3	BM-2-040A	40±5°C	(30±10°C)
4	BM-2-045A	45±5°C	(34±11°C)
5	BM-2-050A	50±5°C	(38±12°C)
6	BM-2-055A	55±5°C	(42±13°C)
7	BM-2-060A	60±5°C	(46±14°C)
8	BM-2-065A	65±5°C	(50±15°C)
9	BM-2-070A	70±5°C	(52±15°C)
10	BM-2-075A	75±5°C	(54±15°C)
11	BM-2-080A	80±5°C	(56±15°C)
12	BM-2-085A	85±5°C	(58±15°C)
13	BM-2-090A	90±5°C	(60±15°C)
14	BM-2-095A	95±5°C	(62±15°C)
15	BM-2-100A	100±5°C	(65±15°C)
16	BM-2-105A	105±5°C	(68±15°C)
17	BM-2-110A	110±5°C	(71±15°C)
18	BM-2-115A	115±5°C	(74±15°C)
19	BM-2-120A	120±5°C	(77±15°C)
20	BM-2-125A	125±5°C	(80±15°C)
21	BM-2-130A	130±5°C	(83±15°C)
22	BM-2-135A	135±5°C	(86±15°C)
23	BM-2-140A	140±5°C	(90±15°C)
24	BM-2-145A	145±5°C	(94±15°C)
25	BM-2-150A	150±5°C	(98±15°C)
26	BM-2-155A	155±5°C	(116±15°C)
27	BM-2-160A	160±5°C	(120±15°C)
28	BM-2-165A	165±5°C	(124±15°C)
29	BM-2-170A	170±5°C	(128±15°C)
30	BM-2-175A	175±6°C	(132±15°C)
31	BM-2-180A	180±6°C	(136±15°C)

CODE	WIRE
N	Without Wire
L16	AWG 16
L18	AWG 18
L20	AWG 20
L22	AWG 22
P0.5	φ 0.5mm Solid Wire
P0.8	φ 0.8mm Solid Wire
P1.0	φ 1.0mm Solid Wire

\* Close temperature is reference for the customer.

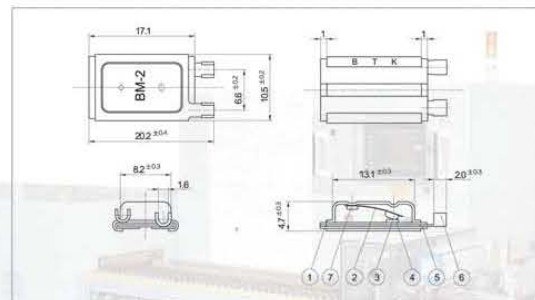


## Description

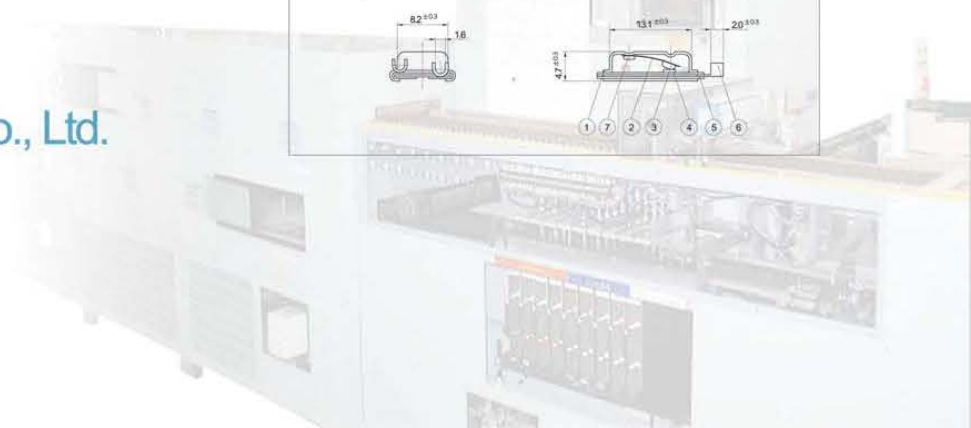
Terminal length is shorter than BM-1 standard type.  
 All other specifications are same of BM-1 standard type.

## Typical applications

BM-2 thermal protector are used principally in transformers, motors, solenoids, lighting ballasts, medical equipments and similar applications.



**BTK** BTK Co., Ltd.



### PROTECTOR DIVISION



### AUTOMATION DIVISION





# VDE & KC CERTIFICATIONS

**VDE Prüf- und Zertifizierungsinstitut**


**ZEICHENGENEHMIGUNG  
MARKS APPROVAL**

BTK Co., Ltd.  
KumGang Hitechvalley 715  
113-1, Sangdewon-Dong, Jungwon-Ku  
462-724 SUNGNAM -SI, KYUNGGI-DO  
SOUTH KOREA

ist berechtigt, für ihr Produkt /  
is authorized to use for their product


Regel- und Steuerungst., temperaturabhängig  
Control, temperature sensing

Die hier abgebildeten markenrechtlich geschützten Zeichen  
für die ab Blatt 2 aufgeführten Typen zu benutzen /  
the legally protected Marks as shown below for the types referred to on page 2 ff.



Geprüft und zertifiziert nach /  
Tested and certified according to

EN 60730-1 (VDE 0811-1:2005-12), EN 60730-2:2004, A1:2006, A12:2006, A13:2006 + A14:2006  
EN 60730-1:2005, EN 60730-2:2004, A1:2006, A12:2006, A13:2006 + A14:2006  
EN 60730-1:2005, EN 60730-2:2004, A1:2006, A12:2006, A13:2006 + A14:2006  
EN 60730-1:2005, EN 60730-2:2004, A1:2006, A12:2006, A13:2006 + A14:2006



Abrechnung: 30011804350001 / 133289  
Fis Nr.  
VDE Prüf- und Zertifizierungsinstitut GmbH  
VDE Testing and Certification Institute  
Zertifizierungsstelle / Certification  
Osnabrück, 2009-07-09

VDE Zertifikat ist nur gültig bei Vorhandensein aller  
VDE-Zertifikate an allen überprüften Bauteilen

VDE VERBAND DER ELEKTROTECHNISCHEN  
ELEKTROUNTERNEHMUNGEN e.V.

EN60730-2-9 (40027834)  
CONTROL, TEMPERATURE SENSING

**VDE Prüf- und Zertifizierungsinstitut**


**ZEICHENGENEHMIGUNG  
MARKS APPROVAL**

BTK Co., Ltd.  
KumGang Hitechvalley 715  
113-1, Sangdewon-Dong, Jungwon-Ku  
462-724 SUNGNAM -SI, KYUNGGI-DO  
SOUTH KOREA

ist berechtigt, für ihr Produkt /  
is authorized to use for their product


Schutzrichtung für Vorschaltgeräte für röhrenförmige Leuchtstofflampen, thermisch  
Protector for ballasts for fluorescent lamps, thermal

Die hier abgebildeten markenrechtlich geschützten Zeichen  
für die ab Blatt 2 aufgeführten Typen zu benutzen /  
the legally protected Marks as shown below for the types referred to on page 2 ff.



Geprüft und zertifiziert nach /  
Tested and certified according to

EN 60730-1 (VDE 0811-1:2005-12), EN 60730-2:2004, A1:2006, A12:2006, A13:2006 + A14:2006  
EN 60730-1:2005, EN 60730-2:2004, A1:2006, A12:2006, A13:2006 + A14:2006  
EN 60730-1:2005, EN 60730-2:2004, A1:2006, A12:2006, A13:2006 + A14:2006  
EN 60730-1:2005, EN 60730-2:2004, A1:2006, A12:2006, A13:2006 + A14:2006



Abrechnung: 30011804350001 / 133291  
Fis Nr.  
VDE Prüf- und Zertifizierungsinstitut GmbH  
VDE Testing and Certification Institute  
Zertifizierungsstelle / Certification  
Osnabrück, 2009-10-19

VDE Zertifikat ist nur gültig bei Vorhandensein aller  
VDE-Zertifikate an allen überprüften Bauteilen

VDE VERBAND DER ELEKTROTECHNISCHEN  
ELEKTROUNTERNEHMUNGEN e.V.

EN60730-2-3 (40014734)  
PROTECTOR FOR BALLASTS  
FLUORESCENT LAMPS

**VDE Prüf- und Zertifizierungsinstitut**


**ZEICHENGENEHMIGUNG  
MARKS APPROVAL**

BTK Co., Ltd.  
KumGang Hitechvalley 715  
113-1, Sangdewon-Dong, Jungwon-Ku  
462-724 SUNGNAM -SI, KYUNGGI-DO  
SOUTH KOREA

ist berechtigt, für ihr Produkt /  
is authorized to use for their product


Motorchutzapparat, thermisch wirkend  
Motor protector, thermal

Die hier abgebildeten markenrechtlich geschützten Zeichen  
für die ab Blatt 2 aufgeführten Typen zu benutzen /  
the legally protected Marks as shown below for the types referred to on page 2 ff.



Geprüft und zertifiziert nach /  
Tested and certified according to

EN 60730-1 (VDE 0811-1:2005-12), EN 60730-2:2004, A1:2006, A12:2006, A13:2006 + A14:2006  
EN 60730-1:2005, EN 60730-2:2004, A1:2006, A12:2006, A13:2006 + A14:2006  
EN 60730-1:2005, EN 60730-2:2004, A1:2006, A12:2006, A13:2006 + A14:2006  
EN 60730-1:2005, EN 60730-2:2004, A1:2006, A12:2006, A13:2006 + A14:2006



Abrechnung: 30011804350001 / 133292  
Fis Nr.  
VDE Prüf- und Zertifizierungsinstitut GmbH  
VDE Testing and Certification Institute  
Zertifizierungsstelle / Certification  
Osnabrück, 2009-10-19

VDE Zertifikat ist nur gültig bei Vorhandensein aller  
VDE-Zertifikate an allen überprüften Bauteilen

VDE VERBAND DER ELEKTROTECHNISCHEN  
ELEKTROUNTERNEHMUNGEN e.V.

EN60730-2-2 (40003602)  
MOTOR PROTECTOR, THERMAL

정수번호(Declaration No.): EKCC2010-0582

**KC**  
자율안전확인신고증서  
Confirmation Letter of Declaration

신고번호: YH02001-10001      유효기간(Validity Period): 2019년 03월 31일  
신고업체: (주)비티케이  
대표자명: 변병립 (President)  
소재지: 경기도 성남시 중원구 장대동 133-1 삼성라이프밸리 715 (Address)  
제품명: 온도차속제어장치 (Product)  
기본모델명: BM-1-180-A/B (Basic Model)  
정격: 250 V~, R A, 180 ℃ (Rating)  
안전모델명: 열침 (Safety Model)  
적용기준: K60730-1(2009), K60730-2-9(2009) (Standard)  
본 확인신고는 제조국: 한국      제조업체: (주)비티케이의 자율안전 확인증서입니다.  
"전기용품안전 관리법 시행규칙 제13조제3항의 규정에 의하여 위의 전기용품  
대하여 자율안전확인 신고증서를 교부합니다."  
We hereby issue the Confirmation Letter of Declaration Self-Regulatory Safety  
Confirmation in accordance with Article 13 Section 3 of the Electrical  
Appliance Safety Control Law Enforcement Regulation.  
2010년 4월      day month year  
한국전력연구원장      한국전력연구원장  
김진      김진  
\* 신고자는 "전기용품안전 관리법" 제 13조 제 3항의 규정에 의하여 위의 전기용품  
대하여 자율안전확인 신고증서를 교부합니다."  
\* The manufacturer shall issue the Confirmation Letter of Declaration Self-Regulatory Safety  
Confirmation in accordance with Article 13 Section 3 of the Electrical  
Appliance Safety Control Law Enforcement Regulation.  
본 제품목록(Annex)  
본 제품목록(Annex)의 내용(General Descriptions of Certified Products)

KC MARK : K60730-2-9 (EKC2010-0582)  
CONTROL, TEMPERATURE SENSING



**Underwriters Laboratories**

MR. HONG-CHUL CHOI  
Rm 715  
715 KUMGANG HITECH VALLEY  
133-1 SANGSAEON 1-DONG  
JUNGWON-GU  
GYEONGGI-DO 443-817 KOREA

DATE: 2009-04-21  
SUBJECT: 94-0001  
FILE NO: 222047  
Project No: JK21568  
SQ No: 2002134  
TYPE: R  
SQ NUMBER: 00004, HK2002-01

**Product - Procedure Analysis Report Material**  
The following material resulting from the investigation under the above subject is included.

Date	File No.	Page	Material Name
2009-04-21	222047	1	00004
2009-04-21	222047	2	00004

Please file original paper and illustrations in place of material of like identity. New material should be filed in the proper material code.

NOTE: Following machine procedure applies to HTF Initials Class Tests, Test Methods and Classification Tests. Report materials DO NOT include Authorization Pages, Indices, Section General Page and Appendices.

Please review this material and report any discrepancies to UL Korea Customer Service, PHONE: 82-2-6971-9000, FAX: 82-2-6971-9001, E-MAIL: customer.service@ul.com, referring to the above Project number 01-0000471. E-MAIL: customer.service@ul.com, referring to the above Project number 01-0000471.

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ISO File

YFZW2(UL), YFZW8(CSA) (E225267)  
THERMAL MOTOR PROTECTOR

## UL & ISO CERTIFICATIONS



131 Piquette Road  
Farmington Hills, MI 48334-3000  
United States Center Contact  
(248) 772-8000  
FAX No. (248) 772-8024  
http://www.ul.com

PLSA: E238541      Page: 1      Revised: 2009-01-13

PROGRAM OF SERVICE PROCEDURE  
17715 01

COMMODITY - THERMOSTATS, THERMISTORS AND REGULATING EQUIPMENT  
(A04P2, A04P3)

Manufacturer: SEN CO LTD  
133-1 SANGSAEON 1-DONG  
JUNGWON-GU, GYEONGGI-DO  
KOREA-DO 443-817 KOREA

Applicant:  
131439-0012

Manufacturer Company: SEN CO LIMITED  
131439-0012

This procedure authorizes the above Manufacturer to use the marking specified by Underwriters Laboratories Inc. ONLY on products covered by this procedure, in accordance with the applicable Rules of Service Agreement.

The prescribed Mark or Marking shall be used only at the above manufacturing location on such products which comply with this Procedure and any other applicable requirements.

The Procedure contains information for the use of the above named Manufacturer and representatives of Underwriters Laboratories Inc. and is not to be used for any other purpose, in its entirety or in part, and that it will be returned to Underwriters Laboratories Inc. upon request.

This PROCEDURE, and any subsequent revisions, is the property of UNDERWRITERS LABORATORIES INC. and is not transferable.

UNDERWRITERS LABORATORIES INC.  
*A. W. Schaefer*  
A. W. Schaefer  
Vice President and General Manager  
UL and Canadian Operations

XAPX2(UL), XAPA8(CSA) (E238541)  
TEMP. INDICATING  
and REGULATING EQUIPMENT



**International Industrial Certification**

**BTK CO., LTD.**

Rm 715, Kumgang Hitech Valley, #133-1, Sangsaewon 1-dong,  
Jungwon-gu, Seongnam-si, Gyeonggi-do, Korea

This is to certify that the Quality Management System of the above mentioned company meets the requirement of

**ISO 9001 : 2000**

Scope  
Development, Manufacture and Servicing of Sensor for  
Temperature and Electric Current

ANZSC code : 2839

Certificate number : JK-13963  
Date of initial approval : 28 February 2009  
Expiry : 27 February 2012

Approved by: *[Signature]*



This certificate is a property of IIC and valid only if regulatory surveillance audit is conducted within the required time.

**International Industrial Certification Co., Ltd.**  
8F, Gyeong Technoside, 1487, Gyeong 3-Dong, Gyeongju-Gu, South, Korea  
Tel : +82-54-6097-9000-4 Fax : +82-54-6097-9001

Accreditation by the Joint Accreditation System of Australia and New Zealand.  
www.jas-anz.com.au/register

ISO 9001  
ANZIC CODE : 2839



**International Industrial Certification**

**BTK CO., LTD.**

Rm 715, Kumgang Hitech Valley, #133-1, Sangsaewon 1-dong,  
Jungwon-gu, Seongnam-si, Gyeonggi-do, Korea

This is to certify that the Environmental Management System of the above mentioned company meets the requirement of

**ISO 14001 : 2004**

Scope  
Development, Manufacture and Servicing of Sensor for  
Temperature and Electric Current

ANZSC code : 2839

Certificate number : JK-21167  
Date of initial approval : 28 February 2009  
Expiry : 27 February 2012

Approved by: *[Signature]*



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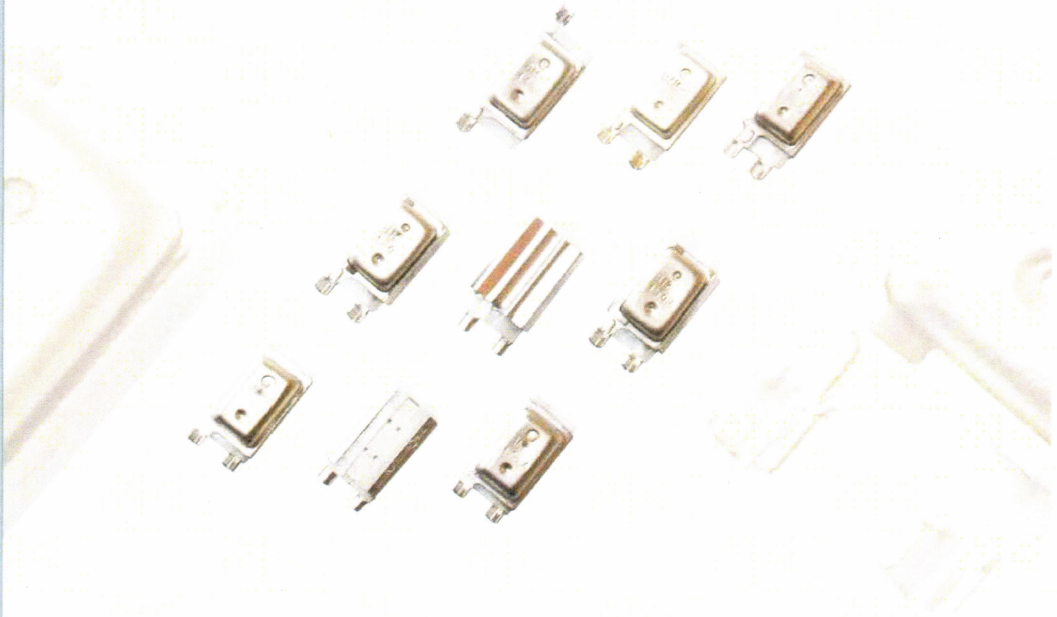
**International Industrial Certification Co., Ltd.**  
8F, Gyeong Technoside, 1487, Gyeong 3-Dong, Gyeongju-Gu, Seoul, Korea  
Tel : +82-54-6097-9000-4 Fax : +82-54-6097-9001

Accreditation by the Joint Accreditation System of Australia and New Zealand.  
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ISO 14001  
ANZIC CODE : 2839

**BTK CO., LTD.**

## THERMAL PROTECTOR



### UL CERTIFICATIONS

UL2111 THERMAL MOTOR PROTECTOR (YFZW2, E225267)  
UL873 TEMP. INDICATING & REGULATING EQUIPMENT  
(XAPAZ, E238541)



### CSA CERTIFICATIONS

UL2111 THERMAL MOTOR PROTECTOR (YFZW8, E225267)  
UL873 TEMP. INDICATING & REGULATING EQUIPMENT  
(XAPAZ, E238541)

### VDE CERTIFICATIONS



EN60730-2-2 MOTOR PROTECTOR, THERMAL (40003602)  
EN60730-2-3 PROTECTOR FOR BALLASTS FLUORESCENT LAMPS (40014734)  
EN60730-2-9 CONTROL, TEMPERATURE SENSING (40027634)

### KC CERTIFICATIONS



K60730-2-9 (EK2010-0582)  
CONTROL, TEMPERATURE SENSING