

BEN TEC

MINIATURE CIRCUIT BREAKERS

BENLO



IS:8828



CM/L-5159870

MINIATURE CIRCUIT BREAKERS

PREFACE

The world around is going fast and our lifestyle is also changing. However, one factor that remained inseparable in our day to day working is the power of electricity. Whether it be the residential, commercial or industrial sector, the distribution needs for running our systems, equipment or household appliances is continuously evolving. Electrical power if not controlled can prove lethal. Hence, SAFETY is the prime concern for checking overloads, short-circuits which can lead to losses. BENTEC Circuit Breakers have been designed to meet such stringent conditions, which meet salient specifications IS : 8828, IEC Pub 898 (95). Bentec MCB is a high fault capacity thermal magnetic type of breaker, which protects against overload and short-circuits. Overload protection is achieved with a thermal bimetal strip, which gets heated in case of overload that in turn pushes the trip latch, which releases the contacts. In case of short circuits, the high fault current energizes the magnetic coil resulting in the plunger striking the trip lever, which ensures immediate release of the breaking mechanism.

SALIENT FEATURES OF BENTEC MCBs

- Meets Latest Standards
- Current Limiting Design
- Fire Retardant Body
- Energy Saving
- Clause 9.6 of 8828
- Shock Proof: Finger Proof as per Test
- Quick Break Operating Mechanism
- 12 Plate Arc Chute
- Angular Vents
- D/N Rail Mounting (35mm Din Rail)
- Pad covering is ON/OFF position

CURRENT LIMITING FEATURE

This features enables the MCB to cut off a prospective fault current at a much lower value than the original peak thereby substantially reducing the let through energy (I^2t) and opening time. During short circuit conditions with very high current flowing through the circuit the contacts are exposed to a repelling magnetic field which initiates an arc and increases the resistance of the circuit. This in turn enables the MCB to open in much shorter time thereby limiting the current and the associated thermo-dynamic stress on the system by reducing the let through energy level.

HOUSING

The housing of Bentec MCBs are made of flame- retardant non-hygroscopic material with high strength thermoset feature that ensures high melting point, high dielectric strength as well as better temperature deflection under load. The MCBs also provide a low linear thermal expansion co-efficient.

HIGH BREAKING CAPACITY

As per the latest standard (IS-8828-1996) Bentec MCBs are tested for a breaking capacity of 10ka and are ISI marked.

CONTACTS

The contacts are made of Silver-inlaid copper which ensures greater life and maximum safety. These contacts are low resistance resulting in low watt loss. The contacts are designed to have zero bounce

ANGULAR VENTS

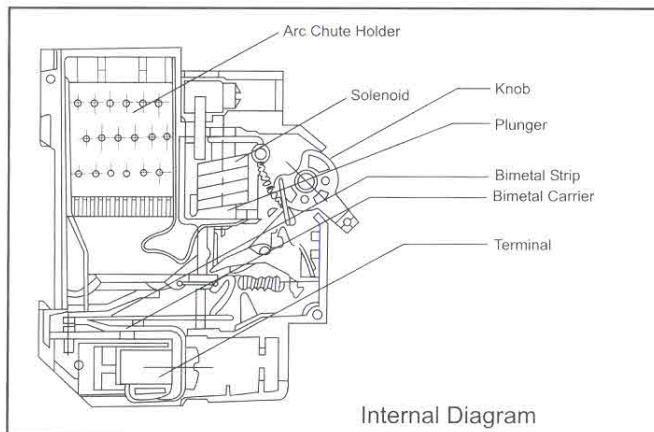
To ensure higher electrical and mechanical life of the product, Bentec MCBs are provided with angular vents which prevents dusts from directly settling on the contacts by limiting its ingress. The lower the foreign impurities on the contacts the higher the life. The vents also provides egress to the hot gases produced during short circuit within the MCB housing.

EFFECTS OF FREQUENCY VARIATIONS

The MCBs are designed to operate at AC frequency range of 50/60 Hz. However.

MOUNTING ARRANGEMENT

Bentec MCBs are installed directly on 35mm DIN Rail by simple snap-on-fixing resulting in ease of installation and removal. The DIN clip is made of engineering plastic to give a potential free mounting arrangement.



Internal Diagram

TECHNICAL AND ECONOMIC ADVANTAGE

Short Circuit Capacity	High short circuit making and breaking capacity
Current Limiting	Compounded with hammer-tripping ensures low let through energy
Discrimination	Excellent discrimination with upstream and downstream breakers and fuses
Variety	Wide range to suit different application
Construction	Compact and modular
Installation	Wide range of distribution boards to facilitate installations for various requirements
Maintenance	Maintenance free as based on fuseless technology

OPERATING MECHANISM

Bentec MCBs have a quick make, quick break, trip-free mechanism i.e. Even if the MCB knob is held in the "ON" position, the MCB will trip in case of overload or short circuit.

IMPACT RESISTANCE

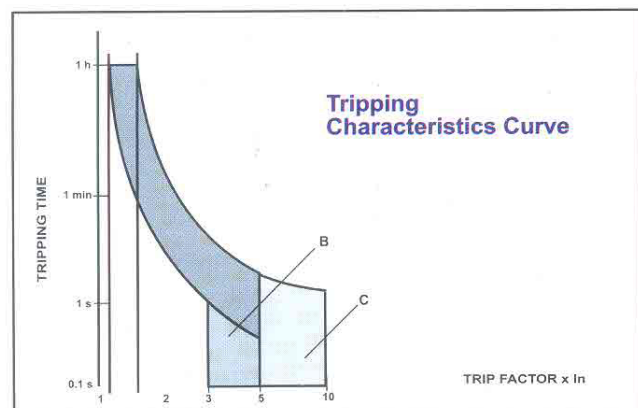
Keeping in mind the vibration hazards of dynamic installations like motors, generators and locomotives, Bentec MCBs are designed to withstand high vibration impacts upto 3 "g".

CHARACTERISTICS CURVES

Bentec MCBs are available with versions for different types of applications they are:

B CURVE - LIGHTING/DISTRIBUTION CIRCUITS

Ideally suitable for predominantly resistive loads like electric

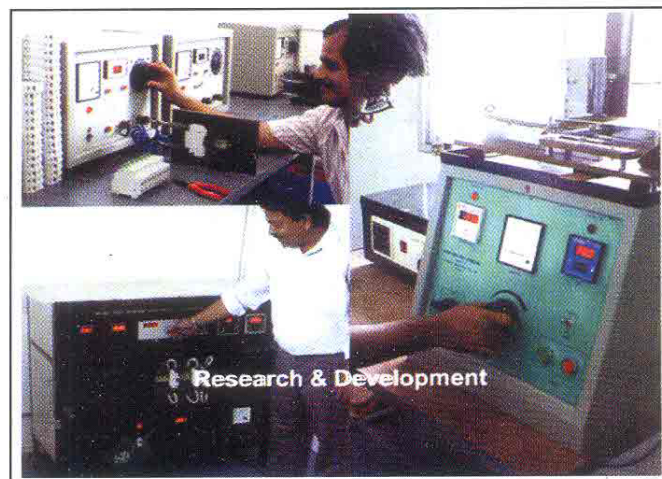


Application Chart		
Appliances	Capacity / Approx. Wattage at 230 Volts A.C.	Required MCB in Amperes
Air Conditioners	1 ton / 1.5 KW	10
	1.5 ton / 2.5 KW	16
	2 ton split / 3.5 KW	20
Refrigerators	165 liters	1.5
	285 liters	2
Room Heaters	1000 watts	6
	2000 watts	10

heaters, ovens, geysers, gls lamps etc these characteristics offer excellent protection under over loads and short circuits for such installations.

C CURVE - MOTOR CIRCUITS

These characteristics ideally suits applications demanding high inrush current and requires closer over load protections. Such loads are predominantly inductive in nature like motors, transformers, gas filled lamps, air conditioners, refrigerators and other equipments.

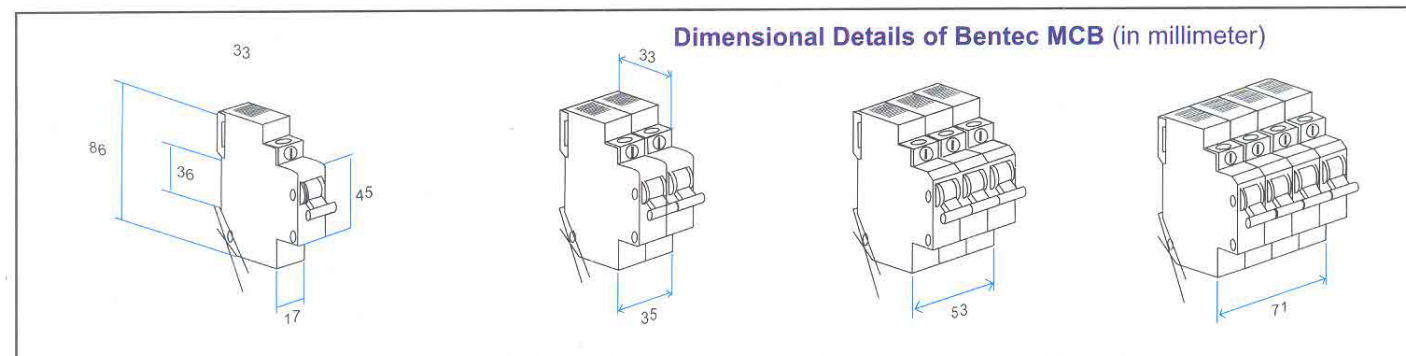


LOW WATT LOSS

Bentec MCBs have been designed to minimize energy loss through unique contact configuration and reduction of hot spots. Watt loss per pole is far lower that the specified IS : 8828 : 1996 IEC Pub 898 (1995) Watt Loss Table.

Rated Current	Max. Allowable Watt Loss per Pole as per IEC 898	Bentec MCB Watt Loss per Pole
<10	3.0	1.2
10<In<=16	3.5	2.6
16<In<=25	4.5	2.4
25<In<=32	6.0	3.5
32<In<=40	7.5	4.3
40<In<=50	9.0	-
50<In<=63	13.0	-

Dimensional Details of Bentec MCB (in millimeter)



TECHNICAL SPECIFICATION

1. Specifications	IS 8828 : 1996, IEC Pub 898 (1995)
2. Number of Poles	1, 1+N, 2, 3, 3+N and 4
3. Rated Currents (In)	0.5 to 63 A
4. Tripping Characteristics	B and C Characteristics
5. Rated Voltages (Ue)	240/415 VAC and 220 VDC
6. Rated Breaking Capacity (Icn)	6/10 KA
7. Rated Frequencies	50/60 Hz
8. Housing	Polybutylene Terephthalate
9. Insulation Voltage (Ui)	500 V
10. Type of Terminals & Maximum Cable Cross Section	25 mm Box Type Terminals on the incoming & 25 mm Block Type Terminals on the outgoing
11. Impulse Power Frequency Voltage	3 KV (50/60 Hz)
12. Impulse withstand Voltage (Uimp)	5 KV (1.2/50μs)
13. Degree of Protection	IP20
14. Mounting	Clip Mounting Rails, 35mm
15. Ambient Temperature	Tmax=55 ⁰ C Tmax=-25 ⁰ C