



# *Fuseology*



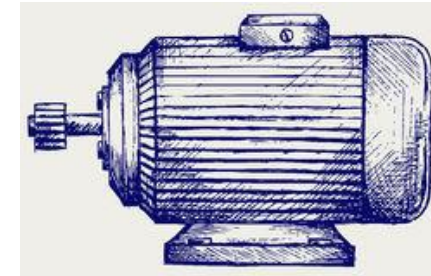
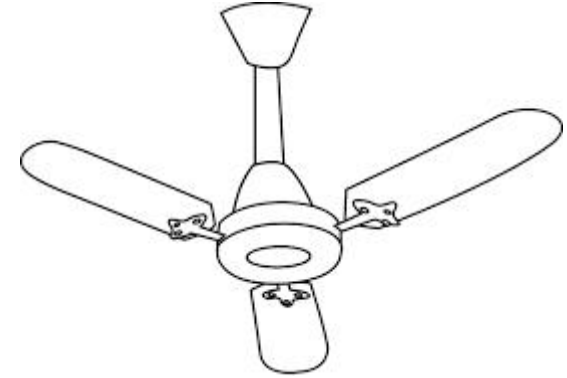
Powering Business Worldwide

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# Electrical Circuits



- Lighting Circuits.
- Fans/Motor/AC/Refrigerator.
- UPS/Inverter/Computer/Laptop etc.
- Lifts/Cranes
- Transformer
- PV Solar
- Electric vehicles



# Electrical Circuits (AC & DC Systems)

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## **VOLTAGE**

- LV- Low Voltage system (up to 1000V)
- MV- Medium Voltage System ( 1 kV – 36kV)
- HV- High Voltage System (above 36kV)
- PV Solar – 1000V DC / 1500VDC

## **CURRENT**

- Line Current (A)
- Potential Fault Current (kA)



# Electrical System Protection

$$\mathbf{P}_{\text{(Power)}} = \mathbf{V}_{\text{(Voltage)}} \mathbf{I}_{\text{(Current)}}$$

Voltage Protection

Current Protection

Overload

Short Circuit

- Circuit Breaker (MCB, MCCB)
- Fuse

# Utilization Category for Fuses

- gG - Full Range (Overload & Short Circuit), General Application**
- gM - Full Range (Overload & Short Circuit), Motor Application**
- aM - Partial Range (Short Circuit), Motor Application**
- gR - Full Range (Overload & Short Circuit), Semiconductor Application**
- aR - Partial Range (Short Circuit), Semiconductor Application**
- gPV - Full Range (Overload & Short Circuit), PV Solar Application**

# Global technology, regional solutions Standards and certifications



Americas

Europe

Middle East

Africa

Asia

Australia



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# Busmann LV BS Range



BS Size	Voltage	Current	Fuse Base
E1	240 VAC	2 - 32A	FA/FB/NSH/NSB
F1, F2	550 VAC	2 - 63A	
A2	550 VAC	2 - 32A	HA/HD/SM32
	690 VAC	2 - 32A	
A3	550 VAC	35 - 63A	KA/SM63
	690 VAC	35 - 63A	
A4	415 VAC	32 - 200A	LA125/SM125
	550 VAC	80 - 160A	
	690 VAC	80 - 200A	
B1	415 VAC	80 - 100A	
	690 VAC	80 - 100A	
B2	415 VAC	125 - 200A	
	690 VAC	125 - 250A	
B3	415 VAC	250 - 315A	
	690 VAC	250 - 315A	
B4	415 VAC	355 - 400A	
	690 VAC	355 - 400A	
C1	415 VAC	450 - 500A	
	690 VAC	355 - 400A	
C2	415 VAC	450 - 500A	
	690 VAC	450 - 630A	
C3	415 VAC	560 - 800A	
	690 VAC	630 - 800A	



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# Bussmann LV DIN Range

DIN Size	Fuse Link (500V)	Fuse Base
000	NHG000B (UPTO 100A)	SB00-PB / ISG160
00	NHG00B (125/160A)	SB00-PB / ISG160
0	NHG0B (50-160A)	
1	NHG1B (200-315A)	SD1-D / ISG250
02	NHG02B (35-250A)	SD2-D / ISG400
2	NHG2B (315-400A)	SD2-D / ISG400
03	NHG03B (250-400A)	
3	NHG3B (425-800A)	SD3-D / ISG630
4	NH4 (1000-1250A)	SD4-D



**Dual Indication**  
**120kA, Breaking Capacity**  
**Insulated Grip version available**  
**690V DIN Fuse**



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# Bussmann LV DIN Fuses Bases

ISG Series

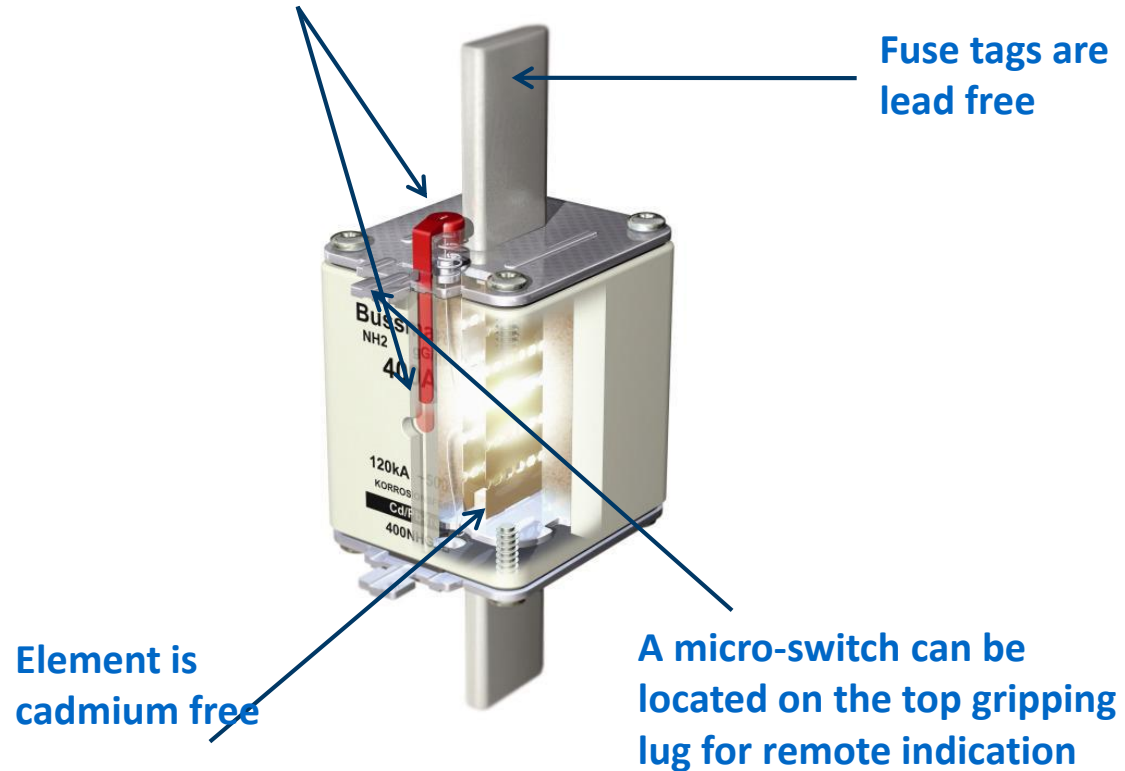


SD series



# Dual Indication Technology

Dual indication is clearly visible at both points



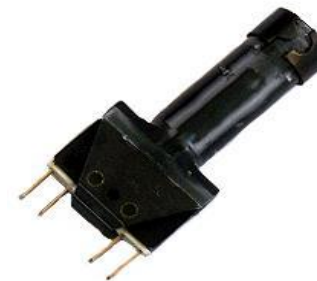
POTENTIAL FREE LUG



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# Bussmann High speed fuse - BS Range

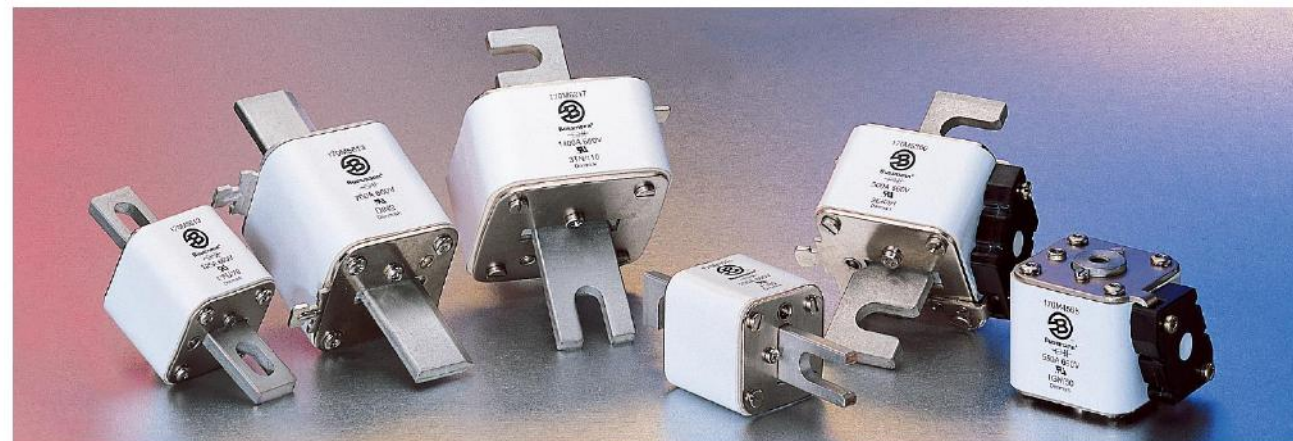
Fuse Link (240V)	Fuse Link (690V)
LCT (6- 20A)	CT (6-20A)
LET (25-180A)	ET(25-80A)/FE (35-100A); EET (90-160A)/ FEE(100-200A)
LMT (160-450A)	MT (160-355A)/ MMT (180-710A)
	FM (180-350A)/ FMM (400-700A)
	800V-GSMJ/ 1000V-GSMK(63-1200A)
Trip Indicator Assembly	EC/ MC (complete)
Micro-switch & adaptor	MAI/ MBI
Fuse Clips	ECLIP/MCLIP/ CL1
Trip Indicator	TI-250/TI600/TI1200/TI2000



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# Square Body – High Speed Fuses

- Designed & tested to IEC 269
- UL Recognized
- 100vac to 1400vac
- Ceramic body
- DC ratings available



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# Square Body Fuses - High Speed Fuses

TYPE	VOLTAGE RATING	CURRENT RATING	SIZE & TYPE
<b>DIN 43653</b>	690-700 V a.c. / V d.c. 690-700 V a.c. 1000 V a.c. 1000 V a.c. 1250-1300 V a.c.	10 to 400A 40 to 2000A 20 to 315A 50 to 1400A 50 to 1400A	170M - size 000 and 00 170M - size 1* to 3 170M - size 00 170M - size 1* to 3 170M - size 1* to 3
<b>DIN 43620</b>	690 V a.c. 690-700 V a.c. 1000 V a.c.	10 to 800A 10 to 1600A 20 to 225A	170M - size 00 to 3 170M - dual indicator 170M - size 00
<b>French style</b>	690-700 V a.c.	40 to 1600A	170M - size 1* to 3
<b>US style</b>	690-700 V a.c. 1000 V a.c. 1250-1300 V a.c.	40 to 2000A 50 to 1400A 50 to 1400A	170M - size 1* to 3 170M - size 1* to 3 170M - size 1* to 3
<b>Drive fuse links</b>	600 V a.c. / 450 V d.c.	1 to 600 A	DFJ
<b>IGBT fuse links</b>	750-800 V d.c. 1000 V d.c.	25 to 630 A 25 to 500 A	170M - size 000 and 230 170M - size 000 and 230
<b>Flush end contact</b>	690-2000 V a.c.	25 to 5500A	170M - SIZE 00 to 5



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# Traction Fuses

TYPE	VOLTAGE RATING	CURRENT RATING	SIZE & TYPE
Square body	750 V d.c.	50 to 1600A	170M - size 1*, 3 and 23
	750 V d.c.	63 to 500A	170E - size 1*, 1, 2 and 3
	850 V d.c. / 1250 V a.c.	1400A	170M7217 - size 4
	1200 V d.c.	20 to 215A	170M - size 1*
	1200 V d.c.	160 to 420A	170F - size 2
	2000 V d.c.	10 to 80A	170E - size 1*
	2000 V d.c.	10 to 125A	170E - size 1*
	2000 V d.c.	20 to 600A	170M
	2400 V d.c.	100 to 400A	170M - size 3
	4000 V d.c.	20 to 125A	170E - size 1*
Ferrule	750 V d.c.	5 to 60 A	FWK
	750 V d.c.	30 to 50 A	LRC750
	1000 V d.c. / 1200-1400-2000 V a.c.	2 to 30 A	FWS and FWL
Round body	750 V d.c.	5 to 60 A	KC36
	750 V d.c.	200 to 400 A	RC
	900 V d.c.	160 to 1000 A	SF
	1500 V d.c.	25 to 200 A	NBC



# Bussmann MV Fuse Range

	Fuse Link
PT Fuse	3.6kV , 7.2kV, 12kV, 24kV, 36kV
Air Type (Bus Duct/ Distribution)	3.6kV, ADGHC (10-100A)
	7.2kV, BDGHC (6.3-80A), AHGHC (50-160A)/ BFGHD (60-160A), AEFMO (30-90A)
	12kV, BDGHC (6.3-50A), AHGHC (56-100A)/ BFGHD (56-100A), AEFMO (3.7-47.25A)
Oil Type	7.2kV OEFMA 100
	12kV OEFMA (6.3-63A), OHFMA (71-80A)
	12kV OHGMA (16-100A), OLGMA 125
Motor Circuits	3.6kV WDOHS(5-630A), 7.2kV WFFMO(50-400A)
	K3PGX, K81PEX, K82PFX (3.6kV 5- 630A)
	K81SVX, KSVX (50-400A)
MV DIN FUSE	TDLSJ / TDLEJ



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# Busmann PV- Solar Fuses & Combiner Boxes

- Utilization class - gPV
- 1000VDC, 1- 20A (10x38mm) PV\*\*A10F
- 1000-1500VDC (Upto 32A (14 x 51; 10 x 85mm).
- Various End Tags
  
- PV NH Fuse (DIN Size- 1,2,3)
- 1000 VDC up to 630 A
- PV NH (XL Fuse) up to 1500VDC, 630A
- Suitable DIN Size holder



# Ferrule Style -Cylindrical Fuses

- Sizes 8x32, 10x38, 14x51 & 22x58 mm (C10Gxx)
- Utilization class - gG / aM
- Rating 400/500/660V ac
- Range 0.5 - 125 Amps, Breaking capacity 120kA
- With built in trip indicator - striker
- 35mm DIN rail mountable holders are available in single and multi pole
- indicating version with Micro switch
- Designed & tested to IEC 269
- UL Recognized
- 150vac to 1250vac
- DC ratings available



# SWITCH TO EATON

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Can we offer cross reference to competitors parts?

**YES!!!**

Need to know...

Competitor part number

Current rating

Voltage rating

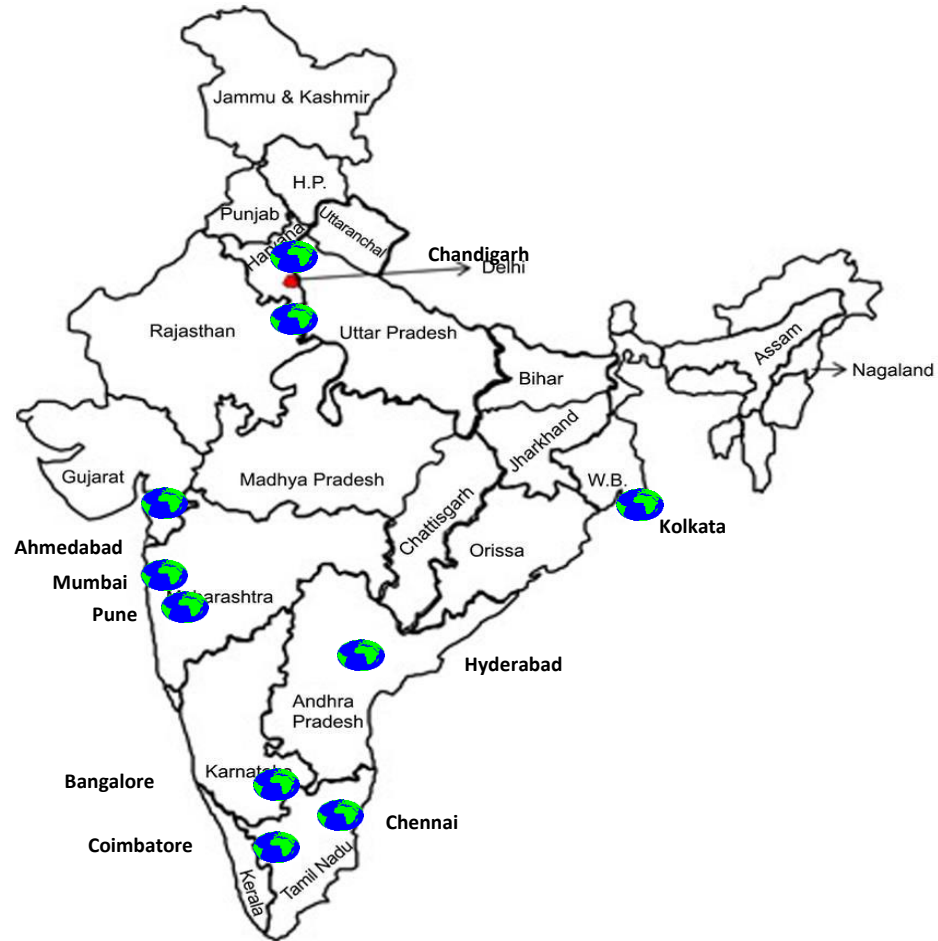
Fuse size required

Characteristics (gG,aM,gR,gM...)



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# Sales Offices



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**Market Leader & PAN India Presence**

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