

# Ultra Rapid Semiconductor Protection Fuses

October 2012 Issue 1

## Whatever your need, IXYS UK can provide the protection you require for your design

With a reputation as one of the world leading manufacturers of power semiconductor devices, IXYS UK is renowned for high quality and class leading research, development, manufacture and marketing of high power silicon products.

This brochure details the range of ultra-rapid semiconductor protection fuses available for the power electronics industry from IXYS UK, specifically designed to provide protection for power semiconductors against circuit faults and to isolate failed devices. Utilising proven advanced technology, our fuses provide the performance and characteristics necessary to meet the levels of protection required in the onerous circuit conditions encountered in today's and tomorrow's power conversion equipment.

The IXYS UK range of fuses offers fast-acting, ultra rapid protection against device rupture, external short circuits, destructive energy let through and excessive peak currents.

These fuses are produced using proven, advanced technology to international standards. The majority of the IXYS UK range has UL recognition.

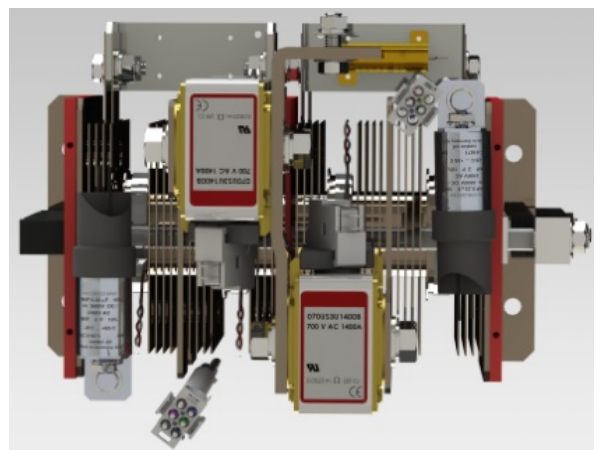


## Applications

- Protection of rectifiers, inverters, DC drives, UPS systems, reduced voltage motor starters and other equipment in globally accepted applications

## Product range

- PSC (Prospective short-circuit) square body fuses
  - American standard, square body
  - French standard, European square body
  - German standard, European square body
- British standard BS88 fuses
- DIN80 standard fuses
- French cylindrical fuses
- Associated microswitches
- Associated fuse holders

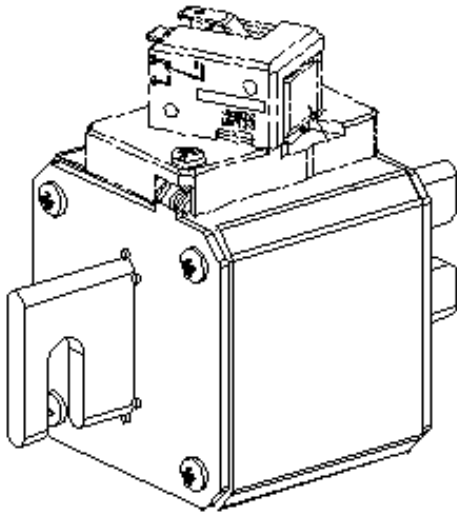


## PSC Square body fuses

Our PSC square body fuse links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment. The 690/700V square body fuse links are available in 4 different body sizes, each having seven worldwide acceptable mounting styles. The 1250/1300V square body fuse links are available in 4 different body sizes with four mounting styles.

Our PSC fuses have been engineered to provide state of the art protection for SCR's, diodes, thyristors, GTO's and IGBT's.

All fuse links are equipped with a low voltage trip indicator. This indicator can operate a field mountable microswitch, also available from IXYS UK, which is easily mounted directly onto the fuse even while in service.



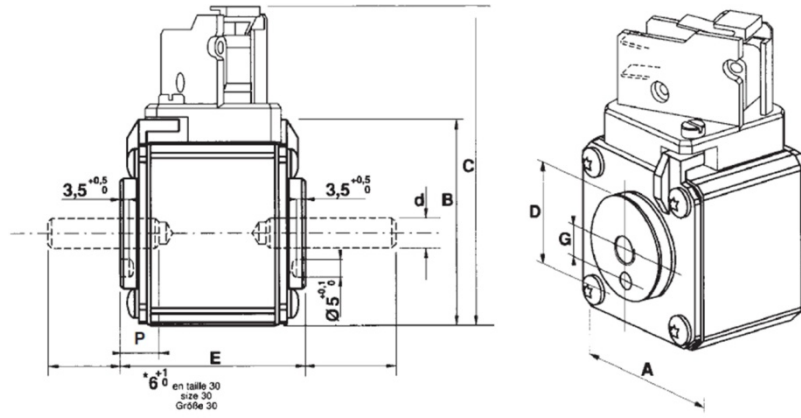
- Extremely fast acting
- Current limiting
- Very low  $I^2t$
- Worldwide acceptability
- Superior cycling ability
- Choice of mounting styles
- Broad range of current ratings in a given body size
- IEC 269-4 compliance for worldwide semiconductor applications

## North American mounting style

Fuse Type:	Part Number	Voltage Range (V)	Current Range (A)		Body size	Outline
500-700V End Contact	070US0UxxxxB	700	63	550	30	F1
	070US1UxxxxB	700	200	800	31	
	070US2UxxxxB	500-700	400	1800	32	
	070US3UxxxxB	500-700	500	2500	33	
500-700V Blade Contact	070US0BxxxxB	700	50	550	30	F2
	070US1BxxxxB	700	160	800	31	
	070US2BxxxxB	700	400	1000	32	
	070US3BxxxxB	650-700	500	1600	33	
500-700V Blade Contact	070US0DxxxxB	700	50	630	30	F2
	070US1DxxxxB	700	160	800	31	
	070US2DxxxxB	500-700	400	1800	32	
	070US3DxxxxB	500-700	500	2500	33	
650-1300V End Contact	130US0UxxxxB	1200-1300	63	350	30	F1
	130US1UxxxxB	1200-1300	160	630	31	
	130US2UxxxxB	1200-1300	280	800	32	
	130US3UxxxxB	600-1300	315	1800	33	
1000-1300V Blade Contact	130US0DxxxxB	1200-1300	63	350	30	F2
	130US1DxxxxB	1300	160	630	31	
	130US2DxxxxB	1100-1300	280	800	32	
	130US3DxxxxB	1000-1300	315	1100	33	

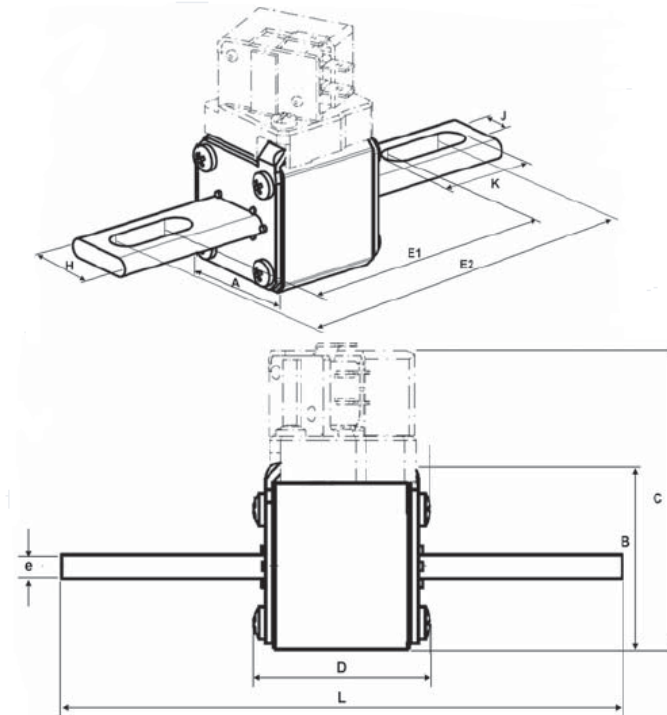


Outline F1



Size	A	B	C	D	d	E	G	P
30	40	46.5	82	26	5/16" x 18	50.6	9	6
31	51	56.5	91	30	5/16" x 18	50.6	9	9
32	60	65.5	100	38	3/8" x 16	50.6	15	9
33	74.5	79.5	114	46	1/2" x 13	50.6	15	9

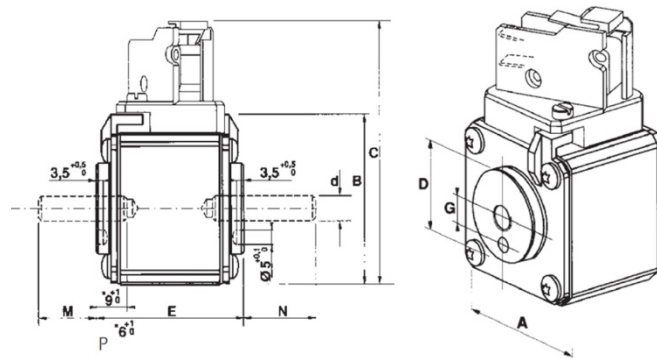
Outline F2



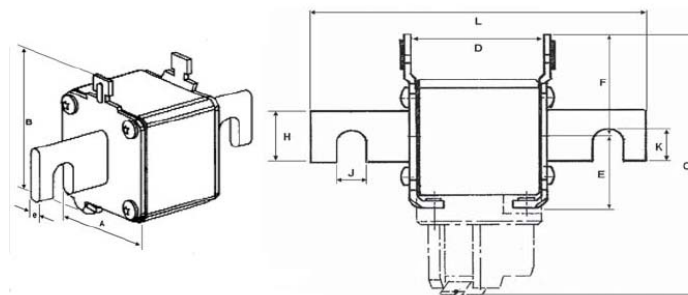
Size	A	B	C	D	E1	E2	H	J	K	L	e
USxB 30	40	46.5	82	47.5	68	107	25.5	10.5	30	129	6
USxB 31	51	56.5	91	47.5	68	107	25.5	10.5	30	129	6
USxB 32	60	65.5	100	47.5	74.5	109	32	14.6	32	134	6
USxB 33	74	79.5	114	48.5	75.4	107.6	40	15.9	32	134	6
USxD 30	40	46.5	82	47.5	87.6	126.6	25.5	10.5	30	148.6	6
USxD 31	51	56.5	91	47.5	91.6	122.4	25.5	14.6	30	148.6	6
USxD 32	60	65.5	100	47.5	94.2	129	32	14.6	32	153	6
USxD 33	74	79.5	114	48.5	94.2	126.6	40	15.9	32	153	6

## European mounting style

Fuse Type:	Part Number	Voltage Range (V)	Current Range (A)		Body Size	Outline
450 - 660(690)V End Contact	069UR0SxxxxB	690	40	550	30	F3
	069UR1SxxxxB	690	160	800	31	
	069UR2SxxxxB	450-690	400	1800	32	
	069UR3SxxxxB	450-690	500	2500	33	
660(690)V Blade Contact	069UF0AxxxxB	690	63	400	30	F4
	069UF1AxxxxB	690	200	700	31	
	069UF2AxxxxB	690	400	1000	32	
	069UF3AxxxxB	690	500	1400	33	
600 - 1250V End Contact	125UR0SxxxxB	1100-1250	63	350	30	F3
	125UR1SxxxxB	1100-1250	160	630	31	
	125UR2SxxxxB	1100-1250	280	800	32	
	125UR3SxxxxB	600-1250	315	1800	33	



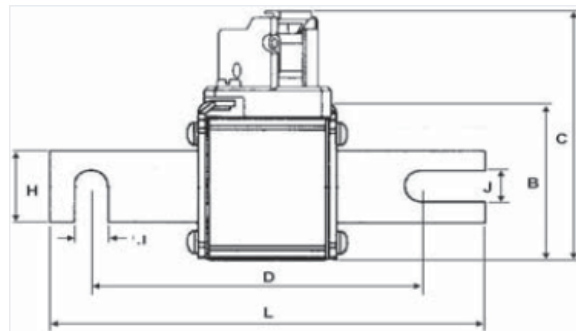
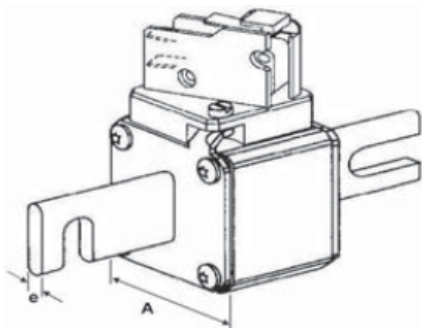
Size	A	B	C	D	d	E	G	M	N	P
30	40	46.5	82	26	M8	50.6	9	22	27	6
31	51	56.5	91	30	M8	50.6	9	19	24	9
32	60	65.5	100	38	M10	50.6	15	19	39	9
33	74.5	79.5	114	46	M12	50.6	15	24	39	9



Size	A	B	C	D	E	F	H	J	K	L	e
30	40	62	96	44.6	76.6	38	18	9	11	110	6
31	51	69	103	44.6	86.6	39	25	10.5	16	110	6
32	60	78	112	44.6	91	43	32	13	21.2	126	6
33	74.5	92.5	127	44.6	91	57	40	13	19.5	126	6

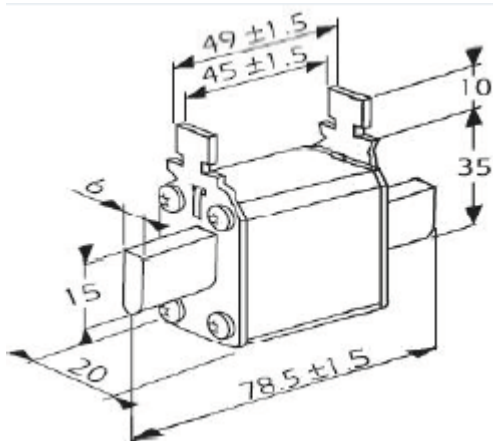
## German mounting style

Fuse Type:	Part Number	Voltage Range (V)	Current Range (A)		Body Size	Outline
DIN80 500 - 660(690)V Blade Contact	069UR0AxxxxB	690	63	550	30	F25
	069UR1AxxxxB	660-690	160	800	31	
	069UR2AxxxxB	500-690	400	1250	32	
	069UR3AxxxxB	600-690	500	1600	33	
DIN110 500 - 660(690)V Blade Contact	069UR0DxxxxB	690	63	550	30	
	069UR1DxxxxB	690	200	800	31	
	069UR2DxxxxB	690	400	1000	32	
	069UR3DxxxxB	600-690	500	1600	33	
DIN110 900 - 1250V Blade Contact	125UR0DxxxxB	1100-1250	63	350	30	
	125UR1DxxxxB	1000-1250	160	630	31	
	125UR2DxxxxB	1000-1250	280	800	32	
	125UR3DxxxxB	900-1250	315	1100	33	
NR Size 000 & 00 Knife Blade Contact	066NRCKxxxxF	660	16	125	000	F26
	066NRDKxxxxF	690	16	160	00	F27
NH Size 000, 00 & 0 Knife Blade Contact	069NHCKxxxxF	690	16	315	000	F28
	069NHDKxxxxF	690	20	315	00	
	069NH0KxxxxF	690	32	315	30	
	069NH1KxxxxF	690	63	400	31	
	069NH2KxxxxF	690	160	700	32	
	069NH3KxxxxF	690	315	1000	33	

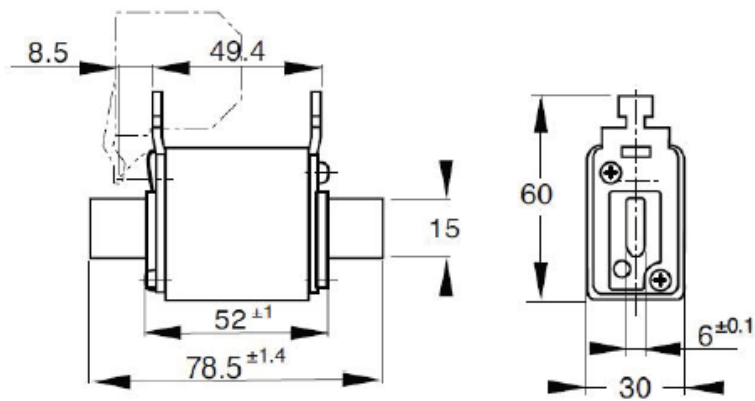


Outline F25

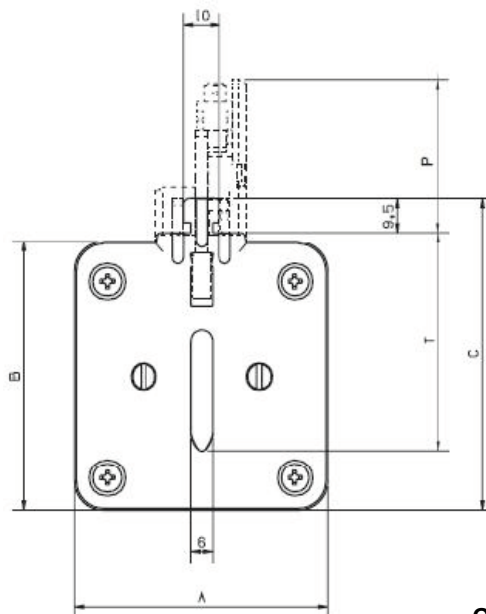
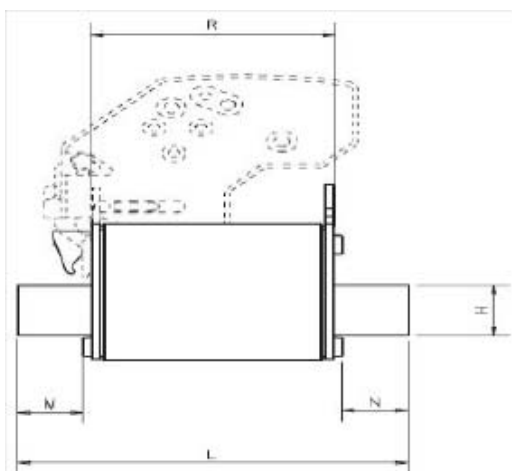
Size	A	B	C	D	H	J	L	e
DIN 80 - Size 30	40	46.5	82	77	25	10.5	110	6
DIN 80 - Size 31	51	56.5	91	77	25	10.5	110	6
DIN 80 - Size 32	60	65.5	100	77	32	10.5	110	6
DIN 80 - Size 33	74.5	79.5	114	77	40	10.5	110	6
DIN 110 Size 30	40	46.5	82	101.6	25	11.1	134.6	6
DIN 110 Size 31	51	56.5	91	101.6	25	11.1	134.6	6
DIN 110 Size 32	60	65.5	100	101.6	32	11.1	134.6	6
DIN 110 Size 33	74.5	79.5	114	101.6	40	11.1	134.6	6



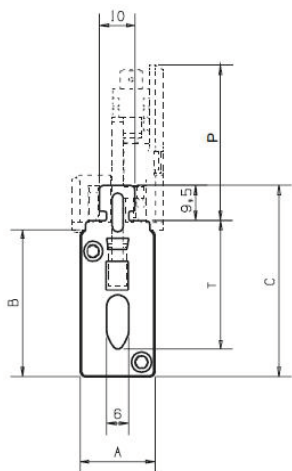
Outline F26



Outline F27



Outline F28




Size	A	B	C	H	L	M	N	P	R	T
000	20.8	40.5	52.5	15	79	13.5	13.5	43.4	49.5	35
00	29.5	47.5	59.5	15	79	13.1	13.1	43.4	50	35
1	39.5	52.5	64.5	20	135	32.1	32.1	43.4	68	40
2	51	60	72	26	150	38.85	38.85	43.4	68	48
3	70	74	86	33	150	38.85	38.85	43.4	68	60



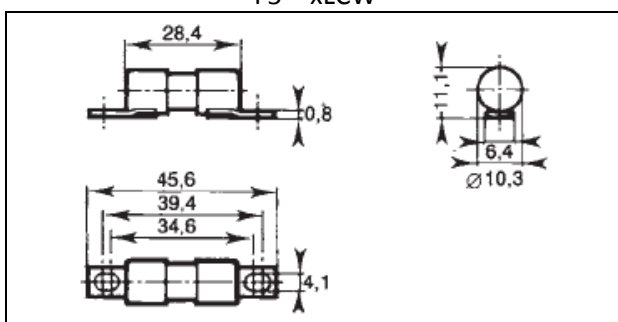
## European Semiconductor Fuses – British standard BS88

These are extremely high interrupting fuses for the protection of power semiconductors as per IEC 269.1 and 269.4. They have voltage ratings up to 690V complying with IEC, DIN and VDE standards and have exceptionally low I<sup>2</sup>t power losses as well as a non-magnetic construction. They also include a highly reliable low voltage indicator system and are UL recognised. They have increased technical performance, higher ratings and a reduced volume and weight.

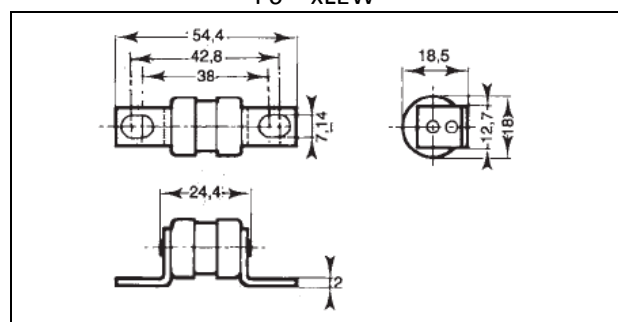
- Extremely high interrupting rate
- Protection of power semiconductors as per IEC standard 269.4
- 690V rating as per IEC 33
- Connections as per DIN 43653/00C
- These fuses are UL recognised 
- All models include integrated trip indicator

Fuse Type:	Part Number	Voltage Range (V)	Current Range (A)		Diameter (mm)	Outline
BS88 250V	xLCW	250	5	32	10	F5
	xLEW	250	7	180	17	F6
	xLEWI	250	7	180	17	F7
	xLMW	250	50	525	36	F8
	xLMWI	250	50	525	36	F9
	xLMMW	250	315	1000	36	F10
	xLMWWI	250	315	1000	36	F11
BS88 660V-690V	xCW	660	5	20	10	F12
	xEW	660	12	100	17	F13
	xEWI	660	12	100	17	F14
	xMW	660	160	400	36	F15
	xMMW	660	180	710	36	F16
	xMMWI	660	180	710	36	F17
BS88 660V Twin	xEEW	660	65	160	17	F18
	xEEWI	660	65	160	17	F19
BS88 660V Size 000	070BQCLxxxN	660	75	400	-	F20
	070BQCLxxxI	660	75	400	-	F21

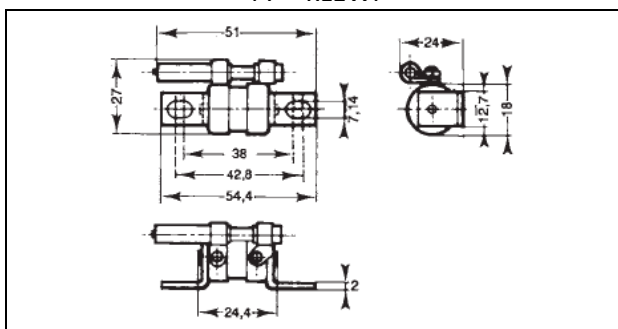
F5 – xLCW



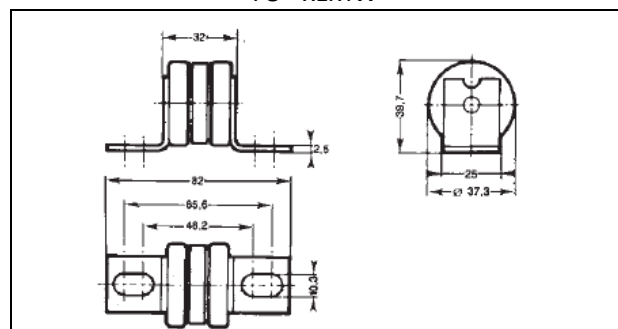
F6 – xLEW



F7 – xLEWI

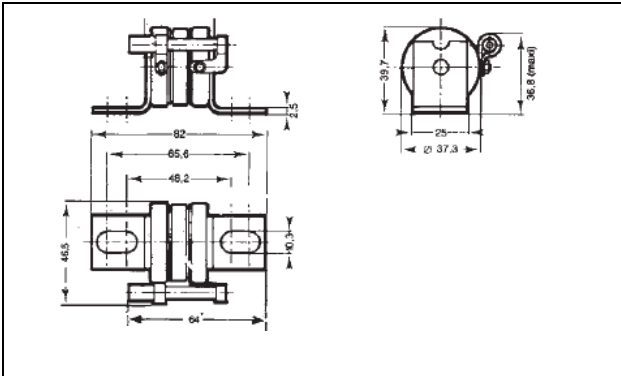


F8 – xLMW

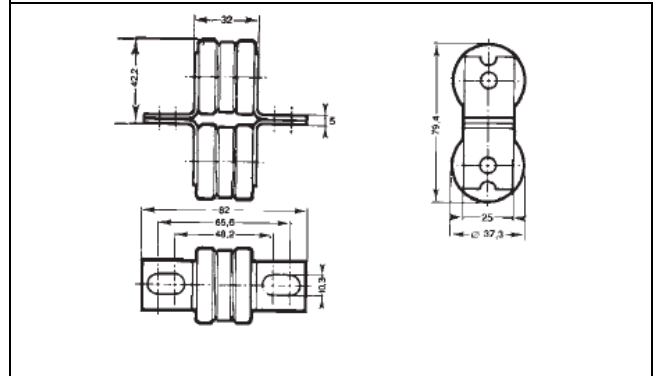




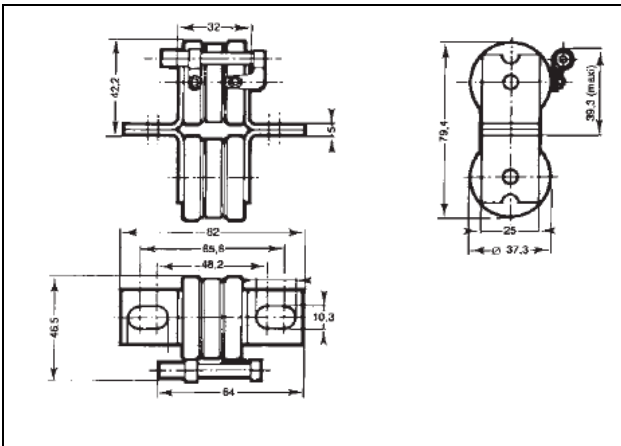
F9 – xLMWI



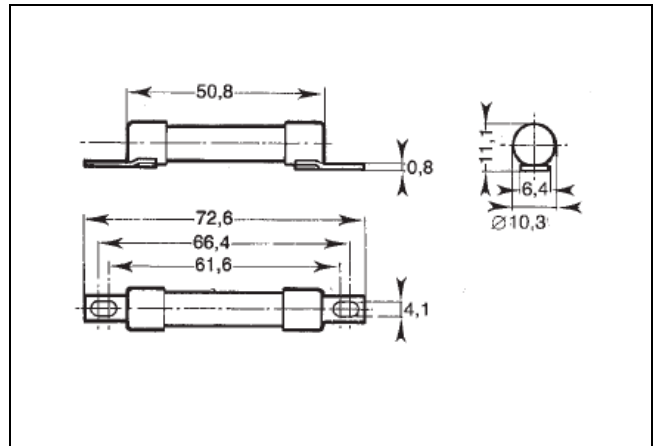
F10 – xLMMW



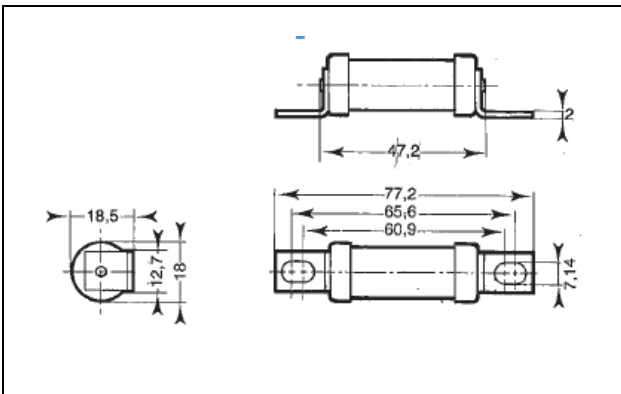
F11 – xLMMWI



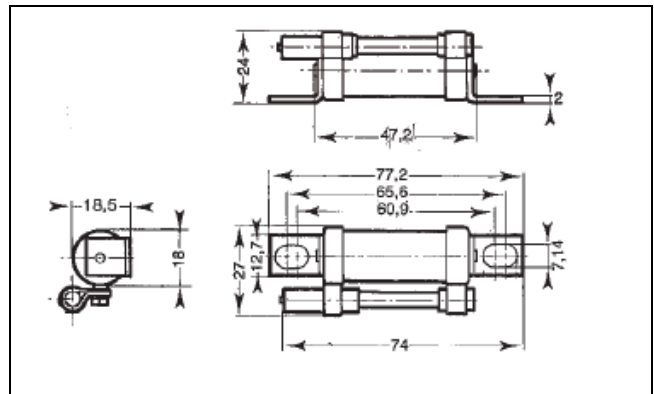
F12 – xCW



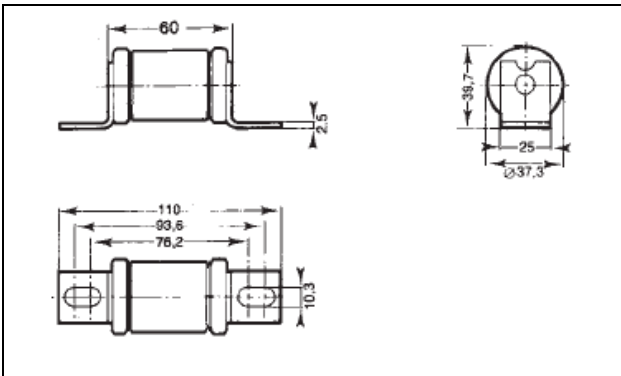
F13 – xEW



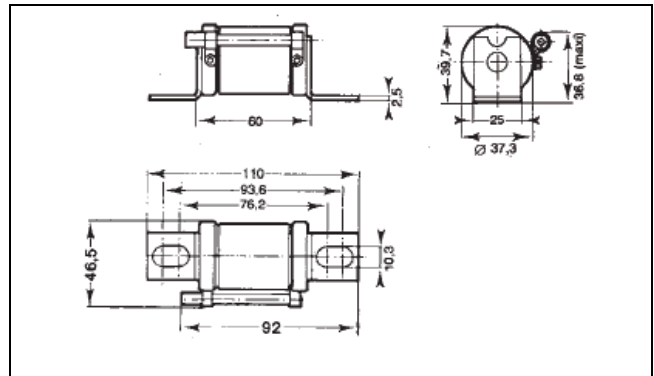
F14 – xEWI



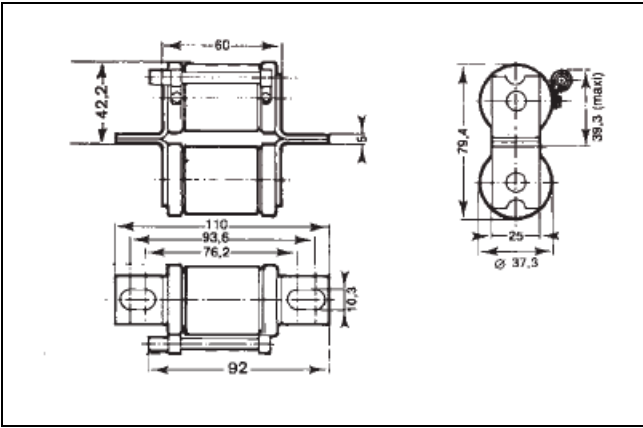
F15 – xMW



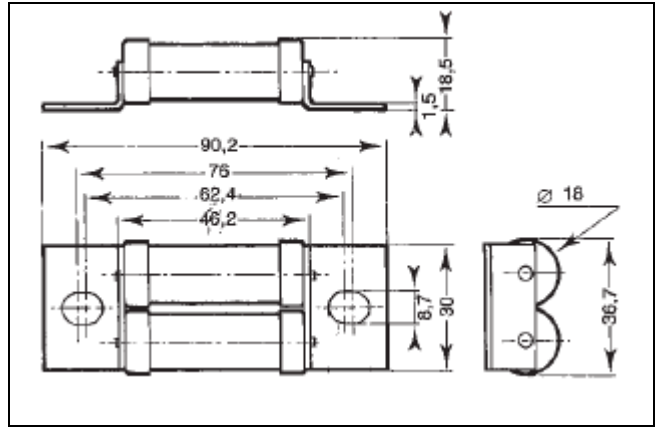
F16 – xMMW



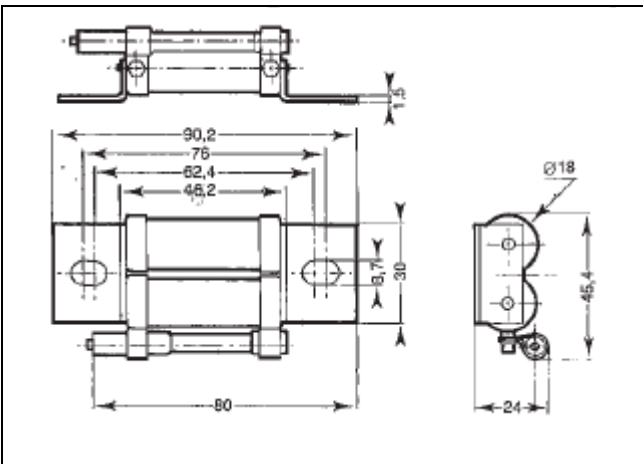
F17 – xMMWI



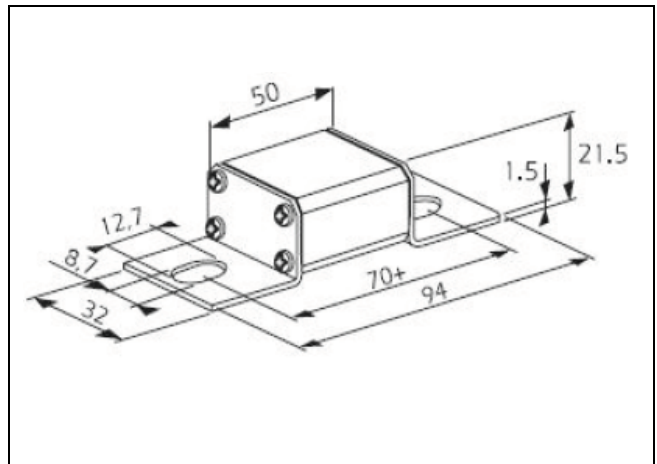
F18 – xEEW



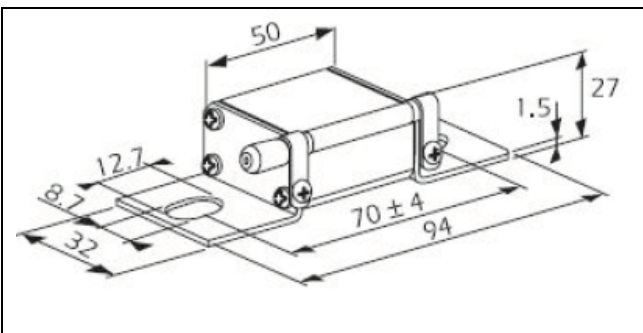
F19 – xEEWI



F20 – 070BQCLxxxxN



F21 – 070BQCLxxxxI



## European Semiconductor Fuses – DIN80 standard

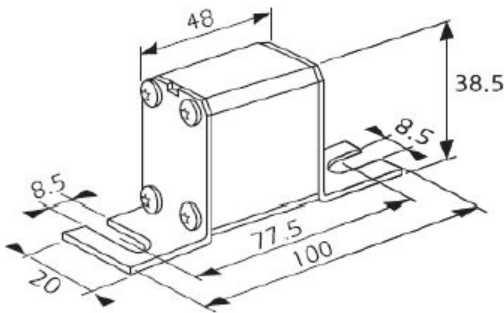
### OPTIMAL PROTECTION OF POWER EQUIPMENT

Thanks to recent technological developments, IXYS UK can bring you this range of protector fuse, capable of clearing all types of overloads, from low multiples of current ratings up to very high short-circuit currents. Enhanced performance enables these fuses to provide solutions to many previously unsolved problems in power electronics: protection of cables without the use of additional components, protection of equipment from fire hazards, selective coordination of different fuses within a single power distribution installation.

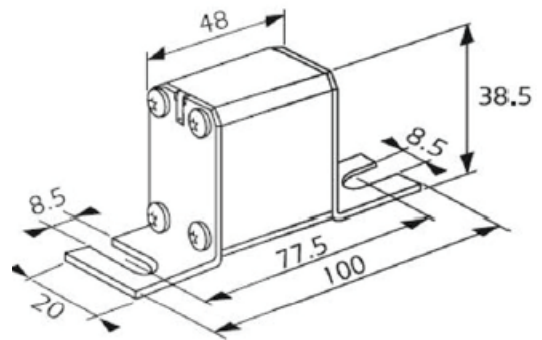
- Extremely high interrupting rate
- Protection of power semiconductors as per IEC standard 269.4
- 690V rating as per IEC 33
- Connections as per DIN 43653/00C
- These fuses are UL recognised



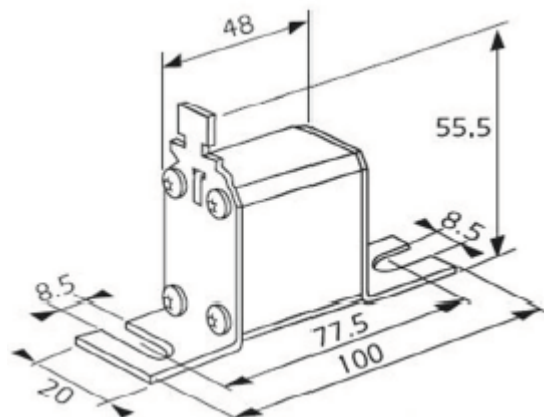
Fuse Type:	Part Number	Voltage Range (V)	Current Range (A)		Body Size	Outline
DIN80 Size 000	070GQCAxxxxF	500-700	80	400	000	F23
	070GQCAxxxxN	500-700	80	400	000	F22
	070GTCAxxxxF	500-700	80	400	000	F24
	070GGCAxxxxF	700	20	125	000	F23
	070GGCAxxxxN	700	16	125	000	F22
	070GSCAxxxxF	700	20	125	000	F24
DIN80 Size 00	069GSDAxxxxF	690	16	160	00	F24
	069GUDAxxxxF	600-690	16	450	00	F24



Outline F22



Outline F23



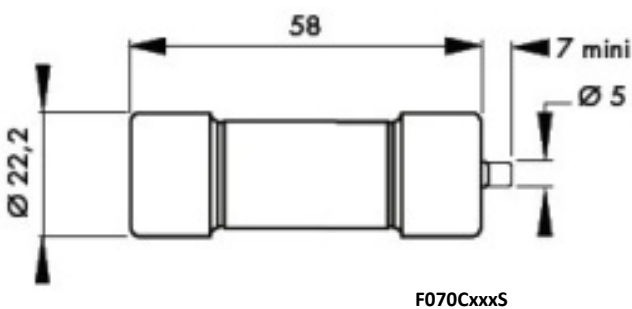
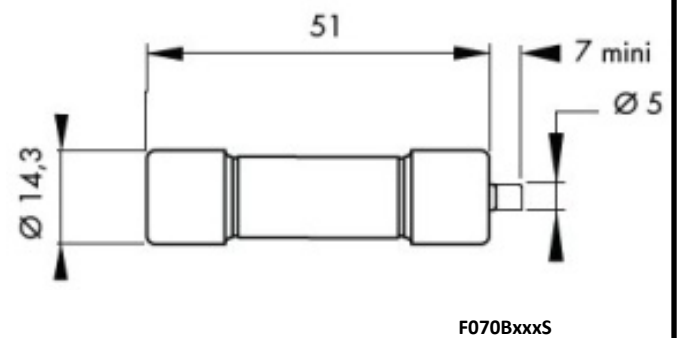
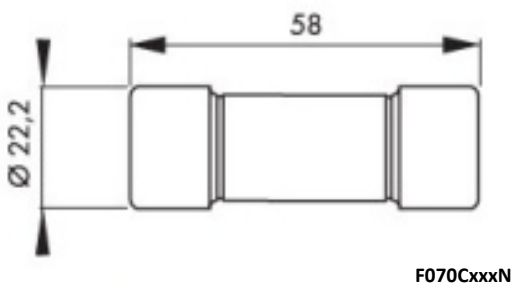
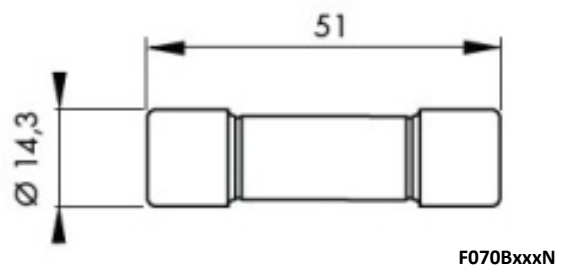
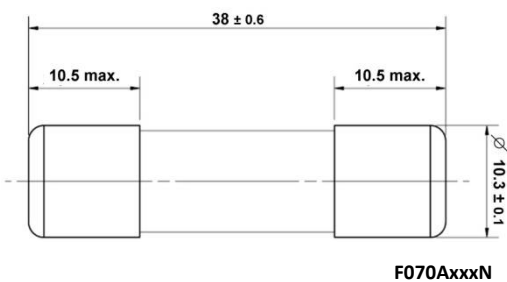
Outline F24

## French Cylindrical Fuses

- Extremely high interrupting rate
- Protection of power semiconductors as per IEC standard 269.4
- 690V rating as per IEC 33
- Connections as per DIN 43653/00C
- These fuses are UL recognised



Fuse Type:	Part Number	Voltage Range (V)	Current Range (A)	
Ferrule Fuses	F070AxxxN	700	1	32
	F070BxxxN	700	1	50
	F070BxxxS	700	1	50
	F070CxxxN	700	20	100
	F070CxxxS	700	20	100



## Microswitches

IXYS UK can offer a range of microswitches to suit our American square-bodied fuses, European square-bodied fuses, BS88 round body fuses and BS88 square body fuses



Microswitch system: MS 3V 1  
 Fuse sizes: 0, 1, 2, 3  
 Indication style: MS 3V 1-5 = Standard NO-NC  
 MS 3V 1-5 BS = Low Level NO-NC  
 MS 3V 1-5 ET = Low Level NO-NC IP 50 (9)  
 MS 3V 1-9 BS = Low Level NO-NC

Part number	AC Insulation Voltage Rating *** (V)	Positive Operating Voltage/Current (V/mA)	Current Rating (A)	Interrupting Rating (A)						AC Voltage Withstand * (kV)	Impulse Voltage test $V_{imp} 1.2/50\mu s$ ** (kV)	Fire Class according to UL 94	
				Current (A)	Non inductive circuit			Inductive Circuit: L/R = 25ms					
					30V	110V	250V	30V	110V				250V
MS 3V 1-5	1000	20/50	10	AC 50/60Hz	10	10	10	10	10	10	8.5	14	H.B.
				DC	8	0.4	0.2	4	0.2	0.1	12	20	
MS 3V 1-5 BS		10/10	3	AC 50/60Hz	3	3	3	2	1	1	8.5	14	
				DC	3	0.5	0.25	3	0.2	0.1	12	20	
MS 3V 1-5 ET		10/10	3	AC 50/60Hz	3	3	3	2	1	1	8.5	14	
				DC	3	0.5	-	2	0.2	-	12	20	
MS 3V 1-9 BS		10/10	3	AC 50/60Hz	3	3	3	2	1	1	8.5	14	
				DC	3	0.5	0.25	2	0.2	0.1	12	20	

Microswitch system: MS 7V 1  
 Fuse sizes: 0, 1, 2, 3  
 Indication style: MS 7V 1-5 = Standard NO-NC  
 MS 7V 1-5 BS = Low Level NO-NC  
 MS 7V 1-5 ET = Low Level NO-NC IP 50 (9)  
 MS 7V 1-9 BS = Low Level NO-NC

Part number	AC Insulation Voltage Rating *** (V)	Positive Operating Voltage/Current (V/mA)	Current Rating (A)	Interrupting Rating (A)						AC Voltage Withstand * (kV)	Impulse Voltage test $V_{imp} 1.2/50\mu s$ ** (kV)	Fire Class according to UL 94	
				Current (A)	Non inductive circuit			Inductive Circuit: L/R = 25ms					
					30V	110V	250V	30V	110V				250V
MS 7V 1-5	1500	20/50	10	AC 50/60Hz	10	10	10	10	10	10	8.5	14	H.B.
				DC	8	0.4	0.2	4	0.2	0.1	12	20	
MS 7V 1-5 BS		10/10	3	AC 50/60Hz	3	3	3	2	1	1	8.5	14	
				DC	3	0.5	0.25	3	0.2	0.1	12	20	
MS 7V 1-5 ET		10/10	3	AC 50/60Hz	3	3	3	2	1	1	8.5	14	
				DC	3	0.5	-	2	0.2	-	12	20	
MS 7V 1-9 BS		10/10	3	AC 50/60Hz	3	3	3	2	1	1	8.5	14	
				DC	3	0.5	0.25	2	0.2	0.1	12	20	

Microswitch system: MS 4L 2  
 Fuse sizes: 0, 1, 2, 3  
 Indication style: MS 4L 2-5 B2 = Standard NO-NC  
 MS 4L 2-5 B6 = Low Level NO-NC

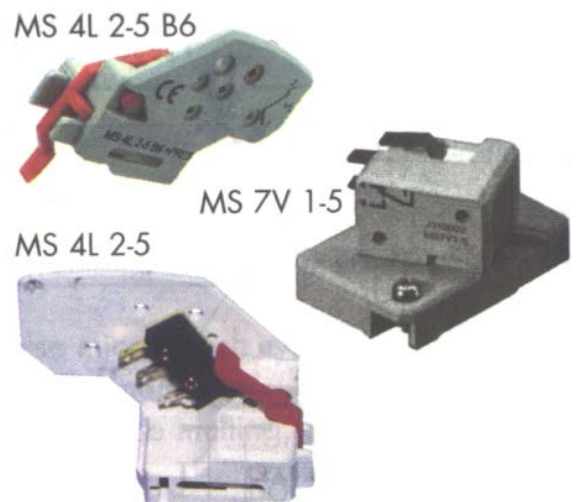
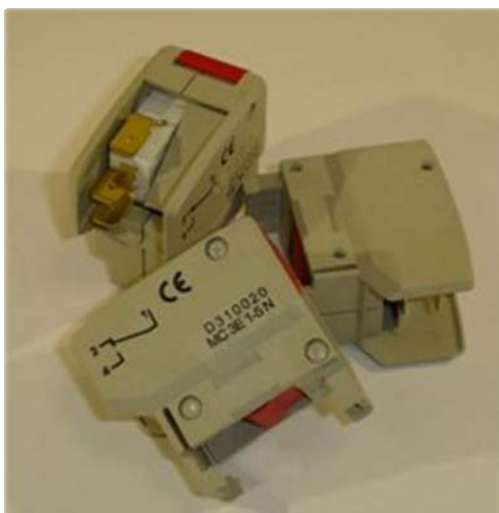
Part number	AC Insulation Voltage Rating *** (V)	Positive Operating Voltage/Current (V/mA)	Current Rating (A)	Interrupting Rating (A)						AC Voltage Withstand * (kV)	Impulse Voltage test $V_{imp} 1.2/50\mu s$ ** (kV)	Fire Class according to UL 94	
				Current (A)	Non inductive circuit			Inductive Circuit: L/R = 25ms					
					30V	110V	250V	30V	110V				250V
MS 4L 2-5 B2+PRES	1000	20/100	5	AC 50/60Hz	4	4	5	-	5	0.4	12	16	VO
				DC	-	-	-	-	2	0.4	8	13	
MS 4L 2-5 B6+PRES		20/50	10	AC 50/60Hz	10	10	10	10	10	10	8	10	
				DC	8	0.4	0.2	4	0.2	0.1			

Microswitch system: MC 6.3 GR 2.5 N  
 Fuse sizes: 0, 1, 2, 3  
 Indication style: For BS88-4 w/separate blown fuse trip indicators

Part number	AC Insulation Voltage Rating *** (V)	Positive Operating Voltage/Current (V/mA)	Current Rating (A)	Interrupting Rating (A)						AC Voltage Withstand * (kV)	Impulse Voltage test $V_{imp} 1.2/50\mu s$ ** (kV)	Fire Class according to UL 94	
				Current (A)	Non inductive circuit			Inductive Circuit: L/R = 25ms					
					30V	110V	250V	30V	110V				250V
MC 6.3 GR 2-5 N	1000	20/100	5	AC 50/60Hz	-	5	3	-	3	2	3.5	-	H.B.
				DC	4	0.4	-	3	0.4	-			

Microswitch system: MC/MCR3E 1-5 N  
 Fuse sizes: 0, 1, 2, 3  
 Indication style: Single pole microswitch for permanent indication of fuse state; conductive or blown

Part number	AC Insulation Voltage Rating *** (V)	Positive Operating Voltage/Current (V/mA)	Current Rating (A)	Interrupting Rating (A)						AC Voltage Withstand * (kV)	Impulse Voltage test $V_{imp} 1.2/50\mu s$ ** (kV)	Fire Class according to UL 94		
				Current (A)	Non inductive circuit			Inductive Circuit: L/R = 25ms						
					30V	110V	250V	30V	110V				250V	
MC3E 1.5 N	1250	20/50	5	AC 50/60Hz	10	10	7	-	-	6	15	20	H.B.	
				DC	5	0.5	-	1.6	0.3	-				
MCR3E 1-5N		2200	20/50	5	AC 50/60Hz	10	10	7	-	-	6	20		30
					DC	5	0.5	-	1.6	0.3	-			

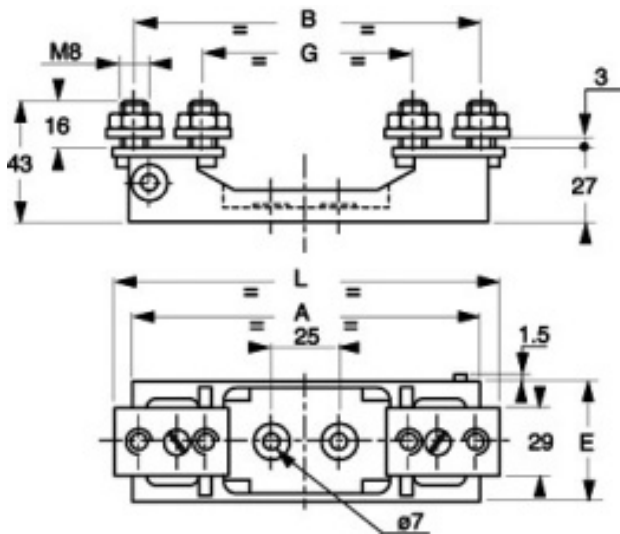


## Fuseholders

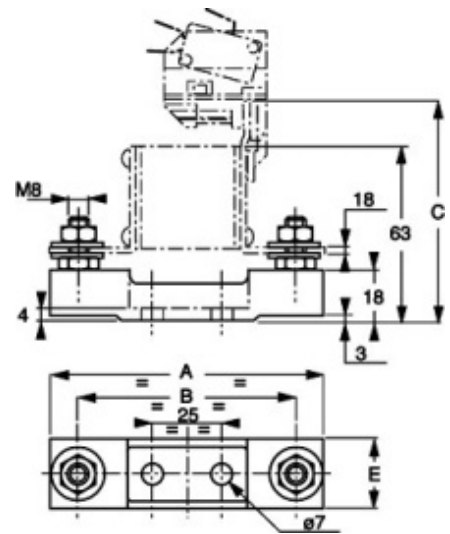
Standard version SI fuseholders for:

- Stud-type fuses
- Blade type fuses (SI00 and SI000)
- Bracket type fuses (SI DIN80 and DIN110)

Part Number	Fuse size	Fuse Type	Insulation Voltage (V) AC, 50/60Hz & DC	Rated Current (A)	Connection	Outline
SI 00 DIN80	00	DIN80	700	400	Blade	FH1
SI 000 DIN80	000	DIN80	700	400	Blade	FH2
SI DIN80 630A	30-33	DIN80	1500	2500	Blade	FH3
SI DIN80 1250A	30-33	DIN80	1500	2500	Blade	
SI DIN110 630A	30-33 - 70-73	DIN110	1500	2500	Blade	
SI DIN110 1250A	30-33 - 70-73	DIN110	1500	2500	Blade	FH4
SI TT 30/31	30, 31	Stud type	1500	1000	End	
SI TT 32/33	32, 33	Stud type	1500	2500	End	
SI TT 70/71	70, 71	Stud type	1500	1000	End	
SI TT 72/73	72, 73	Stud type	1500	2500	End	



FH1



FH2

Outline	Part Number	A	B	C	D	E	G	L	Fuse Sizes
FH1	SI 00 DIN80	133	130			46.5	79	148	00-27×60DIN 80
FH2	SI 000 DIN80	100	80	80	19	25	80	100	000-17×49-27×60 DIN80



