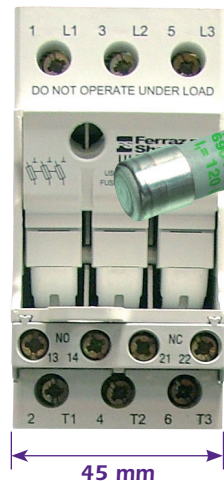


Low Voltage
Modulostar®

Motor Branch
400V AC - 690V AC
up to 11 kW

Innovations in MODULOSTAR® to control energy in motor starters

Already active in the field of motor starters with rated current over 32A per phase, Ferraz Shawmut is innovating with the launch of two new products in the MODULOSTAR range: the CMSFM10 compact three-pole fuse holder and 10.3x38 690V fuses for motor systems.



Fuse system

Protection against short circuits

Contactor
Overload relay

Power control
Protection against overloads

Switch-disconnector

Safety isolation (close to the motor)

Motor

Motor

In a typical motor starter set-up the advantages to using a fuse rather than a circuit breaker are obvious: Cost savings on maintenance, Better safety for workers and equipment with type 2 and 1 coordination as per IEC 947-4. Outstanding current limitation and very high interrupting rating. MODULOSTAR® is the name of our protection range built to IEC ferrule fuse standard. MODULOSTAR® means compactness, high performance and innovation. It's a full range.

Coordination in protection against electrical faults

IEC standard 947-4 defines types of coordination:

Type 1: the safety of people and property is ensured but there is still a risk of damage to the motor starter

Type 2: the risk of damage is limited to the contacts on the contactors, which may be welded together

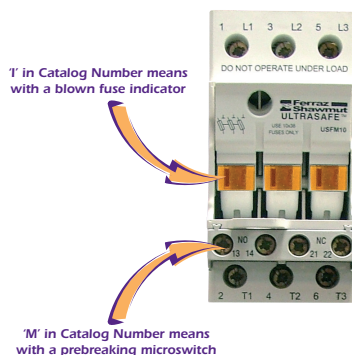
Type 3: total coordination for zero risk

CMSFM10 compact three-pole fuse holder

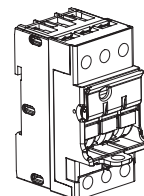
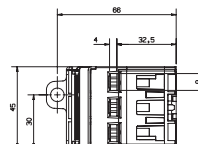
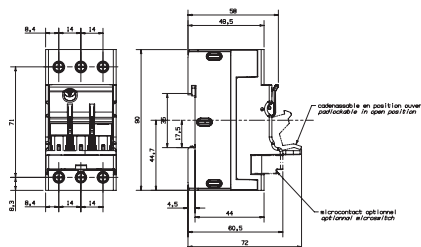
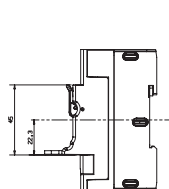
The CMSFM10 is a compact three-pole fuse holder for 10.3x38 ferrule-style fuses, for use with contactors of the same compact size of 45mm (instead of 3x17.5 = 52.5mm for the CMS103).

It is modern in design and made with brand new automatic manufacturing processes.

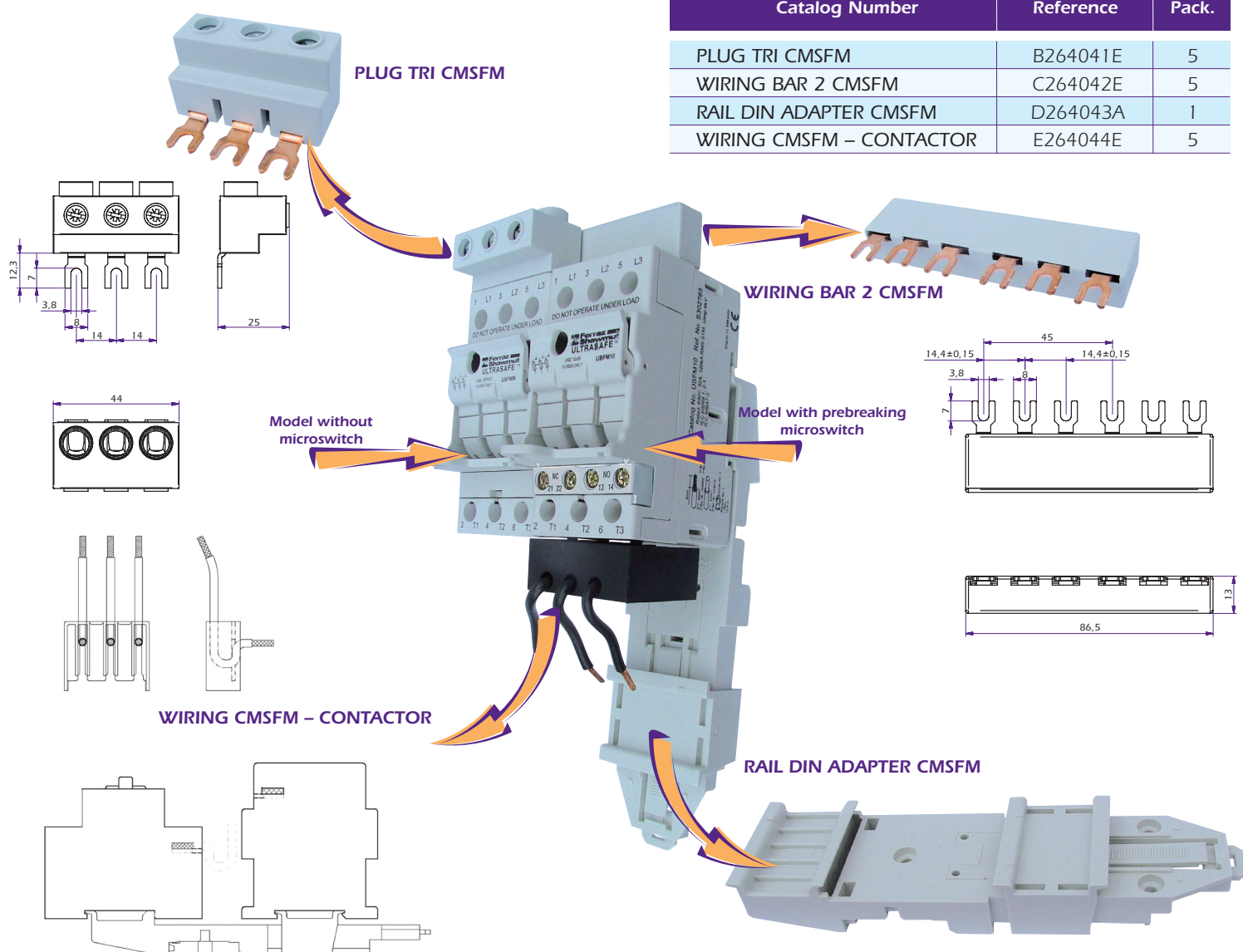
A complete set of accessories is available. In particular, it is sold with a high performance, multifunctional wiring system.



Cat Number	Ref. Number	U_N	I_N	Power loss in Watts
CMSFM10	S302765A	690	32	3
CMSFM10M	T302766A	690	32	3
CMSFM10I	W302768A	690	32	3
CMSFM10MI	V302767A	690	32	3



Accessories



Catalog Number	Reference	Pack.
PLUG TRI CMSFM	B264041E	5
WIRING BAR 2 CMSFM	C264042E	5
RAIL DIN ADAPTER CMSFM	D264043A	1
WIRING CMSFM – CONTACTOR	E264044E	5

10.3x38 690V aM class fuses

The MODULOSTAR® range of ferrule-style fuses has been enlarged by the addition of 10.3x38 690V models for motors. This is a Ferraz Shawmut innovation. They provide a type-2 coordination as per the IEC 947-4. These fuses are available in ratings up to 16A to provide a fuse solution to needs for electrical protection of motor starters at any power level.

Low Voltage
Modulostar®



Current In (A)	Un Voltage (V)	Power dissipation at In	Motor power @ Un (Hp)*	Motor power (kW)	I motor (A)	Breaking capacity @ Un (kA)	Cat. Number	Ref. Number
1	690	0.1	0.5	0.37	0.65	80	FR10AM69V1	H302779J
2	690	0.16	0.75 to 1.5	0.55 to 1.1	0.75 to 1.6	80	FR10AM69V2	J302780J
4	690	0.3	2 to 4	1.5 to 3	2 to 3.8	80	FR10AM69V4	K302781J
6	690	0.35	5.4	4	4.9	80	FR10AM69V6	L302782J
8	690	0.45	7.5	5	6.6	80	FR10AM69V8	M302783J
10	690	0.55	10	7.5	8.9	80	FR10AM69V10	N302784J
12	690	0.7	13.5	10	11.5	80	FR10AM69V12	P302785J

* 3-phase asynchronous motor 660V 1500 rpm

for Un motor = 400V you have to derate for the same fuse rating use a motor with lower power (factor= 0.58 to 0.65).

The table provides the current rating of fuse for standard starting conditions i.e. 2 starts per day at 6In 2 seconds for a 3-phase motor at 1500 rpm @ new IEC voltages 400V and 690V.

For a 3000 rpm motor speed the rating is the one published here with a coefficient factor between 0.8 and 0.95.

Other Ferraz Shawmut products

A fuse provides a perfectly suitable solution for all possible configurations, in particular when used with drives and soft starters.

In such cases the CMSFM fuse holder with gR class PROTISTOR® fuses provides effective protection for the whole set-up. Our gRB range provides a type-3 coordination as per the IEC 947-4.

Soon a new range of gS class PROTISTOR® ferrule-style fuses will be added to the choice of solutions, providing all the advantages already offered by gS class NH PROTISTOR® fuses, i.e. the unmatched performance of the PROTISTOR® fuse, reliable I^2t , protection from any kind of overload, and no thermal derating in standard fusegear.

Current	Catalog Number	Reference	Motor power @ 690V (HP)	Motor power (kW)	I motor (A)
1	FR10GB69V1	Z330279	0.12	0.09	0.15
1.25	FR10GB69V1.25	X330001			
1.5	FR10GB69V1.5	Y330002	0.18	0.13	0.2
2	FR10GB69V2	Z330003			
2.5	FR10GB69V2.5	A330004	0.25	0.18	0.28
3	FR10GB69V3	B330005	0.37	0.27	0.42
4	FR10GB69V4	C330006	0.50	0.37	0.57
5	FR10GB69V5	D330007	0.55	0.40	0.6
6	FR10GB69V6	E330008	0.75	0.55	0.85
8	FR10GB69V8	F330009	1 to 1.5	0.74 to 1.1	1.2 to 1.6
10	FR10GB69V10	G330010	2.2	1.6	2
12.5	FR10GB69V12.5	H330011	3 to 3.8	2.2 to 2.8	2.8 to 3.5
16	FR10GB69V16	J330012	4	2.9	4.3
20	FR10GB69V20	K330013	4.5	3.3	4.9 to 6.6
25	FR10GB69V25	L330014	5.5 to 7.5	4 to 5.5	
30	FR10GB69V30	M330015			8.9 to 11.5
32	FR10GB69V32	Y330278	10 to 13.5	7.5 to 10	



Voltage Rating (VAC)	Rated current In (A)	Pre-arcing I^2t I^2tp (A ² s)	Total I^2t at 660VAC I^2tt (A ² s)	Dissipated power at 0.8 In (W)		Peak arc voltage (V)	Breaking capacity I (kA)
690	1	0.075	0.28	0.9	0.52	2500	160 kA 690 V (IEC)
690	1.25	0.115	0.36	1.25	0.7	2500	160 kA 690 V (IEC)
690	1.5	0.185	0.57	1.5	0.81	2500	160 kA 690 V (IEC)
690	2	0.42	1.3	2	1.1	2500	160 kA 690 V (IEC)
690	2.5	0.88	2.7	2.1	1.15	2500	160 kA 690 V (IEC)
690	3	1.55	4.6	2.3	1.25	2500	160 kA 690 V (IEC)
690	4	4	12	2.6	1.35	2500	160 kA 690 V (IEC)
690	5	8.6	25	2.7	1.4	2500	160 kA 690 V (IEC)
690	6	15	44	2.9	1.5	2500	160 kA 690 V (IEC)
690	8	3.3	33	2.4	1.35	1450	160 kA 690 V (IEC)
690	10	5.4	55	3.4	1.85	1450	160 kA 690 V (IEC)
690	12.5	8.5	82	3.4	1.9	1450	160 kA 690 V (IEC)
690	16	16	145	4.1	2.3	1450	160 kA 690 V (IEC)
690	20	230	250	4.3	2.4	1450	160 kA 690 V (IEC)
690	25	58	470	4.7	2.7	1450	160 kA 690 V (IEC)
690	30	96	740	5	2.9	1450	160 kA 690 V (IEC)

Refer to the prescription document on drives and soft starters.

10.3x38 400 and 500V aM class fuses

The Modulostar® range of ferrule-style fuses also includes 400 and 500V rated models. They provide a type-2 coordination as per the IEC 947-3.



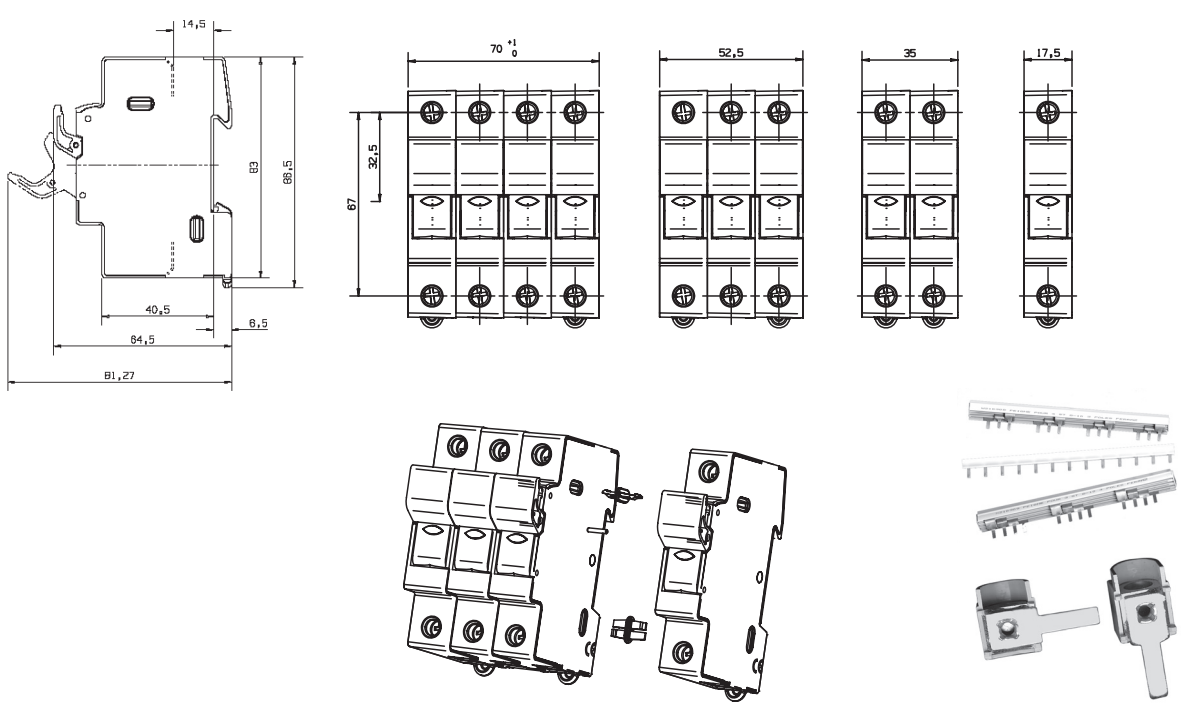
Current In (A)	Voltage (V)	Power dissipation at In	Motor power @ Un (Hp) *	Motor power (kW)	Breaking capacity @ Un (kA)	Cat.Number	Ref.Number
0.16	500	0.35			120	FR10AM50V0.16	E214617J
0.25	500	0.50			120	FR10AM50V0.25	M215130J
0.5	500	0.13	0.135	0.1	120	FR10AM50V0.5	W216150J
2	500	0.20	0.75	0.55	120	FR10AM50V2	H218714J
4	500	0.30	2	1.5	120	FR10AM50V4	W219232J
6	500	0.45	3	2.2	120	FR10AM50V6	F222208J
8	500	0.55	4	3	120	FR10AM50V8	Z211553J
10	500	0.65	5.5	4	120	FR10AM50V10	Y211552J
12	500	0.75	7.5	5.5	120	FR10AM50V12	D214110J
16	500	0.90	10	7.5	120	FR10AM50V16	P215132J
20	500	1.10	11.1	8.5	120	FR10AM50V20	X216151J
25	400	1.40	13.5	10	120	FR10AM50V25	L217682J
32	400	2.0			120	FR10AM40V32	J218715J

* 3-phase asynchronous motor 400V 1500 rpm

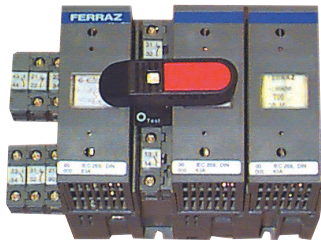
The other MODULOSTAR® fuse holders for 10.3x38 ferrule-style fuses can be used in motor starter systems.



Cat Number	Ref.Number	U _N	I _N	Power loss in Watts
CMS101	T305020K	690	32	3
CMS101I	A305026K	690	32	3
CMS103I	D305029D	690	32	3
CMS103	X305023D	690	32	3



Our ITC fused switch disconnecter line is also designed to be mounted in motor starter systems.



Cat Number	Ref.Number	U_N	I_N	Power loss in Watts
ITC32S3CF	J205283A	1000	32	3
ITC32S3NCF	K205284A	1000	32	3
ITC32S4CF	L205285A	1000	32	3

To get the full benefit of our fusegear, don't forget Fuse Monitoring to help seek out the fault and reduce the time spent by maintenance or repair people.

FUSE MONITORING: LOCATING A FAULT MADE EASY!



Simplicity itself!

- Green LED on: Power on and fuses operational
- No LED on: Power off
- Red LED on: One or more blown fuses

Ask us for our literature on Fuse Monitoring (ref. GP011)

For more details on our Fuse Monitoring offering refer to our brochure GP009.



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