



SMR1

Selective electronic protection.

SMR2

Modular electronic protection with enhanced functionality

Mag Break™

Magnetic Only protection

Y

Non Automatic or switch
(not mentioned in tables)

FG Frame

Breaking capacities

Icu 400/415V AC in kA eff.

Type	N	H	L
FG400	50	80	150
FG630	50	80	150

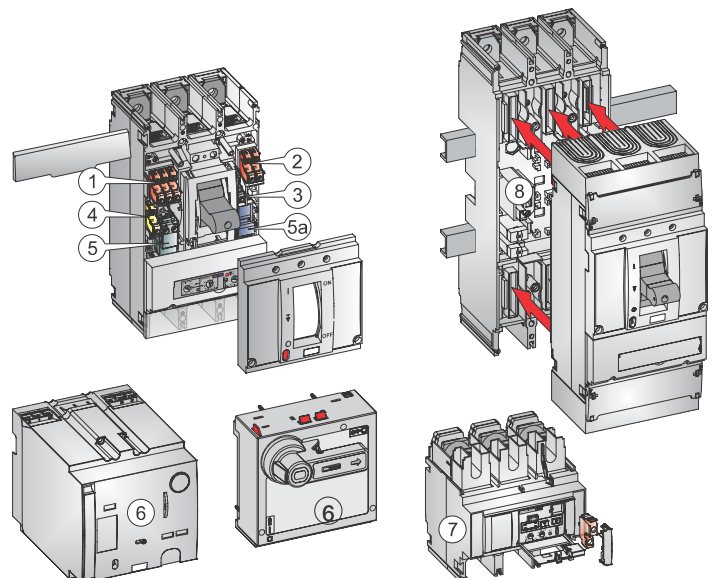
Protection

Trip Unit	Rated Current (A)	SMR1	SMR2	Mag Break™
	A			
FG400	250	N, H, L	N, H, L	N, H, L
	350	-	N, H, L	-
	400	N, H, L	N, H, L	N, H, L
FG630	400	N, H, L	N, H, L	-
	500	N, H, L	N, H, L	N, H, L
	630	N, H, L	N, H, L	-

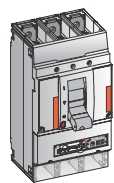
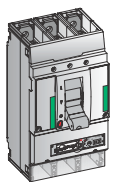
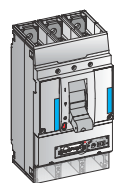
Number of poles / protected poles (trips)			
3 pole 3 trips	N, H, L	N, H, L	N, H, L
4 pole 3 trips	N, H, L	N, H, L	N, H, L
4 pole 4 trips	N, H, L	N, H, L	-
4 pole 3.5 trips (N=50%)	N, H, L	N, H, L	-

Accessories (main types)

- ① Auxiliary contact left mounted (NO or NC) 1, 2 or 3pcs.
- ② Auxiliary contact right mounted (NO or NC) 1 or 2pcs.
- ③ Bell Alarm electronic trip unit (NO or NC)
- ④ Bell Alarm mechanism (NO or NC)
- ⑤ Shunt or Undervoltage release
- ⑤a Actuator for electronic trip unit.
- ⑥ Operators
 - Rotary handle
 - Electrical operator
- ⑦ Bottom mounted RCD (below trip unit)
(Insert indicates Bell alarm contact mounting)
- ⑧ Plug-in or draw-out system



FG400 - Complete circuit breaker

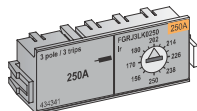


Selective Electronic Trip Unit (SMR1) without Rating Plug

	In (A)	3 pole		4 pole ⁽¹⁾		Cat. no.	Ref. no.	Cat. no.	Ref. no.
		Cat. no.	Ref. no.	Cat. no.	Ref. no.				
50kA FGN	250	FGN36AA250LKF	434248	FGN46AA250LKF	434253				
	400	FGN36AA400LLF	431455	FGN46AA400LLF	431536				
80kA FGH	250	FGH36AA250LKF	434232	FGH46AA250LKF	434237				
	400	FGH36AA400LLF	431032	FGH46AA400LLF	431106				
150kA FGL	250	FGL36AA250LKF	434240	FGL46AA250LKF	434245				
	400	FGL36AA400LLF	431246	FGL46AA400LLF	431330				
		One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware							

Type line 0.625 - 1 x In

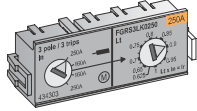
Adjustable Rating Plugs for Trip Units SMR1



	In (A)	3 pole 3 trips		4 pole 3 trips ⁽¹⁾		4 pole 4 trips ⁽¹⁾		4 pole 3.5 trips (N=50%) ⁽¹⁾	
250A	160	FGRJ3LK0160	434337	FGRJ43LK0160	434345	FGRJ4LK0160	434361	FGRJ45LK0160	434353
	250	FGRJ3LK0250	434341	FGRJ43LK0250	434349	FGRJ4LK0250	434365	FGRJ45LK0250	434357
	400A	FGRJ3LL0250	435343	FGRJ43LL0250	435356	FGRJ4LL0250	435397	FGRJ45LL0250	435367
400A	400	FGRJ3LL0400	433151	FGRJ43LL0400	433163	FGRJ4LL0400	433187	FGRJ45LL0400	433175

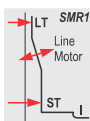
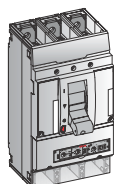
Type line/Motor
0.4 - 1 x In

Switchable Rating Plugs for Trip Units SMR1

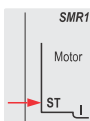
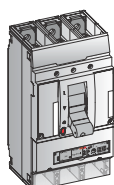


	In (A)	3 pole 3 trips		4 pole 3 trips ⁽¹⁾		4 pole 4 trips ⁽¹⁾		4 pole 3.5 trips (N=50%) ⁽¹⁾	
250A	250	FGRS3LK0250	434303	FGRS43LK0250	434307	FGRS4LK0250	434315	FGRS45LK0250	434311
	400A	FGRS3LL0400	435435	FGRS43LL0400	434516	FGRS4LL0400	434537	FGRS45LL0400	434525

Selective Electronic Trip Unit (SMR1) with switchable Rating Plug



	In (A)	3 pole 3 trips		4 pole 3 trips ⁽¹⁾		4 pole 4 trips ⁽¹⁾		4 pole 3.5 trips (N=50%) ⁽¹⁾	
50kA FGN	250	FGN36SA250LKF	434249	FGN436SA250LKF	434251	FGN46SA250LKF	434254	FGN456SA250LKF	434252
	400	FGN36SA400LLF	434489	FGN436SA400LLF	435277	FGN46SA400LLF	435280	FGN456SA400LLF	434504
80kA FGH	250	FGH36SA250LKF	434233	FGH436SA250LKF	434235	FGH46SA250LKF	434238	FGH456SA250LKF	434236
	400	FGH36SA400LLF	434399	FGH436SA400LLF	434408	FGH46SA400LLF	434426	FGH456SA400LLF	434414
150kA FGL	250	FGL36SA250LKF	434241	FGL436SA250LKF	434243	FGL46SA250LKF	434246	FGL456SA250LKF	434244
	400	FGL36SA400LLF	434444	FGL436SA400LLF	434453	FGL46SA400LLF	434474	FGL456SA400LLF	434462
		One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle elongator + Rating plug + Breaker finishing covers + Fixation hardware							



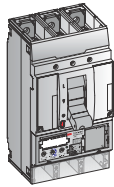
Selective Electronic Trip Unit (SMR1) with Rating Plug, without Overload (LT) protection

	In (A)	3 pole 3 trips		4 pole 3 trips ⁽¹⁾					
50kA FGN	400	FGN36BM400LLF	434687	FGN436BM400LLF	434693				
80kA FGH	400	FGH36BM400LLF	434663	FGH436BM400LLF	434669				
150kA FGL	400	FGL36BM400LLF	434675	FGL436BM400LLF	434681				
		One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle elongator + Rating plug + Breaker finishing covers + Fixation hardware							

(1) Neutral on the left. If neutral on the right is needed, please contact us.

FG400 - Complete circuit breaker

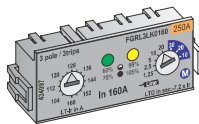
Modular Electronic Trip Unit (SMR2) without Rating Plug



	In (A)	3 pole		4 pole ⁽¹⁾		Cat. no.	Ref. no.	Cat. no.	Ref. no.
		Cat. no.	Ref. no.	Cat. no.	Ref. no.				
50kA FGN	250	FGN36KA250LKF	434073	FGN46KA250LKF	436159				
	350 ⁽²⁾	FGN36KA350LLF	434483	FGN46KA350LLF	434510				
	400	FGN36KA400LLF	436156	FGN46KA400LLF	436160				
80kA FGH	250	FGH36KA250LKF	436150	FGH46KA250LKF	434041				
	350 ⁽²⁾	FGH36KA350LLF	434393	FGH46KA350LLF	434420				
	400	FGH36KA400LLF	436151	FGH46KA400LLF	434042				
150kA FGL	250	FGL36KA250LKF	434049	FGL46KA250LKF	436153				
	350 ⁽²⁾	FGL36KA350LLF	434438	FGL46KA350LLF	434468				
	400	FGL36KA400LLF	434050	FGL46KA400LLF	436154				
One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Filler for extension module and battery socket + Breaker finishing covers + Fixation hardware									

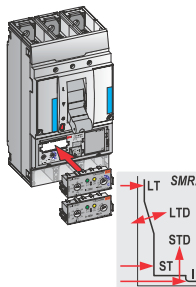
LT: $I_r = 0.625 \times I_n$
LTD: Line & Motor; 8 options

Adjustable LT & LTD settable Rating Plugs for Trip Units SMR2



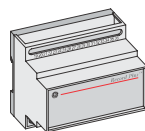
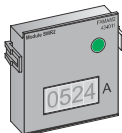
	In (A)	3 pole 3 trips		4 pole 3 trips ⁽¹⁾		4 pole 4 trips ⁽¹⁾		4 pole 3.5 trips (N=50%) ⁽¹⁾	
250A	160	FGRL3LK0160/7	436749	FGRL4LK0160 /7	434469	FGRL4LK0160/7	434559	FGRL45LK0160 /7	434472
	250	FGRL3LK0250/7	436656	FGRL4LK0250 /7	434615	FGRL4LK0250/7	434562	FGRL45LK0250 /7	434481
400A	250	FGRL3LL0250/7	436747	FGRL4LL0250 /7	434599	FGRL4LL0250/7	434568	FGRL45LL0250 /7	434579
	400	FGRL3LL0400/7	436721	FGRL4LL0400 /7	434617	FGRL4LL0400/7	434584	FGRL45LL0400 /7	434482
350 ⁽²⁾	350 ⁽²⁾	FGRL3LL0350/7	436748	FGRL4LL0350 /7	434601	FGRL4LL0350/7	434582	FGRL45LL0350 /7	434596

Modular Electronic Trip Unit (SMR2) with two adjustable Rating Plugs, setting 0.4 - 1 x In



	In (A)	3 pole 3 trips		4 pole 3 trips ⁽¹⁾		4 pole 4 trips ⁽¹⁾		4 pole 3.5 trips (N=50%) ⁽¹⁾	
50kA FGN	400	FGN36VA400LLF	435140	FGN46VA400LLF	435152	FGN46VA400LLF	435170	FGN456VA400LLF	435164
80kA FGH	400	FGH36VA400LLF	434953	FGH46VA400LLF	434960	FGH46VA400LLF	434983	FGH456VA400LLF	434971
150kA FGL	400	FGL36VA400LLF	435065	FGL46VA400LLF	435077	FGL46VA400LLF	435128	FGL456VA400LLF	435095
One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle elongator + Two rating plugs + Filler for extension module and battery socket + Breaker finishing covers + Fixation hardware									

Extension modules for the SMR2 Electronic trip unit Plug-in types replacing the filler module (1 pc max.)



Ammeter with 4 digit LCD display	FAMAM2	436183
Groundfault alarm + Modbus communication (RTU)	FAMGAM2	436185
Groundfault alarm + 2 channel load shedding device	FAMGAS2	436186
Groundfault alarm + Fault type indicators	FAMGAT2	436187
Groundfault protection + Modbus communication (RTU)	FAMGFM2	436188
Groundfault protection + 2 channel load shedding device	FAMGFS2	436189
Groundfault protection + Fault type indicators	FAMGFT2	436190
2 channel load shedding device + Modbus communication (RTU)	FAMSM2	436192
2 channel load shedding device + Fault type indicators	FAMST2	436197
Fault type indicators + Modbus communication (RTU)	FAMMT2	436191
Spare filler module	FAMB2	434448

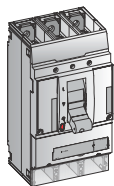
One code covers: A plug-in module and where needed connection hardware

Other Modules

External communication and contact module (4 contacts, 1A/400V) ⁽³⁾	FAMECM	434013
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One code covers: Module and connection hardware

Non-Automatic Circuit Breaker (Switch rated at 40°C)



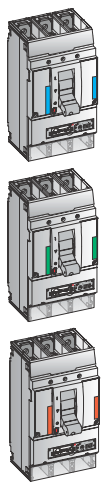
	In (A)	3 pole		4 pole ⁽¹⁾	
FGY	400	FGY306D400LF	431659	FGY406D400LF	431671
One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle elongator + Breaker finishing covers + Fixation hardware					

(1) Neutral on the left. If neutral on the right is needed, please contact us.

(2) Specifically configured for Motor Protection

(3) Is needed for Modbus communication (1 per breaker).

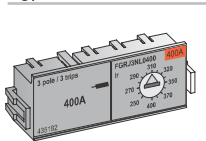
FG630 - Complete circuit breaker



Selective Electronic Trip Unit (SMR1) without Rating Plug

	In (A)	3 pole		4 pole ⁽¹⁾		Cat. no.	Ref. no.	Cat. no.	Ref. no.
		Cat. no.	Ref. no.	Cat. no.	Ref. no.				
50kA FGN	400	FGN36AA400NLF	434561	FGN46AA400NLF	434636				
	500 ⁽²⁾	FGN36AA500NNF	434812	FGN46AA500NNF	434866				
	630	FGN36AA630NNF	431461	FGN46AA630NNF	431539				
80kA FGH	400	FGH36AA400NLF	433142	FGH46AA400NLF	434432				
	500 ⁽²⁾	FGH36AA500NNF	434600	FGH46AA500NNF	434630				
	630	FGH36AA630NNF	431038	FGH46AA630NNF	431132				
150kA FGL	400	FGL36AA400NLF	434459	FGL46AA400NLF	434534				
	500 ⁽²⁾	FGL36AA500NNF	434645	FGL46AA500NNF	434770				
	630	FGL36AA630NNF	431249	FGL46AA630NNF	431333				
One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware									

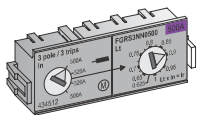
Type line 0.625 - 1 x In



Adjustable Rating Plugs for Trip Units SMR1

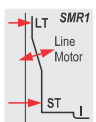
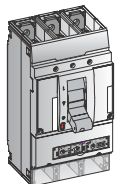
	In (A)	3 pole 3 trips		4 pole 3 trips ⁽¹⁾		4 pole 4 trips ⁽¹⁾		4 pole 3.5 trips (N=50%) ⁽¹⁾	
400A	250	FGRJ3NL0250	433148	FGRJ43NL0250	433160	FGRJ4NL0250	433184	FGRJ45NL0250	433172
	400	FGRJ3NL0400	435182	FGRJ43NL0400	435188	FGRJ4NL0400	435200	FGRJ45NL0400	435194
630A	400	FGRJ3NN0400	433154	FGRJ43NN0400	433166	FGRJ4NN0400	433190	FGRJ45NN0400	433178
	630	FGRJ3NN0630	433157	FGRJ43NN0630	433169	FGRJ4NN0630	433193	FGRJ45NN0630	433181

Type line/Motor 0.4 - 1 x In



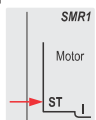
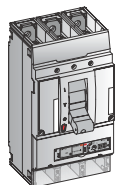
Switchable Rating Plugs for Trip Units SMR1

	In (A)	3 pole 3 trips		4 pole 3 trips ⁽¹⁾		4 pole 4 trips ⁽¹⁾		4 pole 3.5 trips (N=50%) ⁽¹⁾	
400A	400	FGRS3NL0400	433235	FGRS43NL0400	433241	FGRS4NL0400	433253	FGRS45NL0400	433247
500 ⁽²⁾	500	FGRS3NN0500	434512	FGRS43NN0500	434521	FGRS4NN0500	434542	FGRS45NN0500	434530



Selective Electronic Trip Unit (SMR1) with switchable Rating Plug

	In (A)	3 pole 3 trips		4 pole 3 trips ⁽¹⁾		4 pole 4 trips ⁽¹⁾		4 pole 3.5 trips (N=50%) ⁽¹⁾	
50kA FGN	400	FGN36SA400NLF	431530	FGN436SA400NLF	431596	FGN46SA400NLF	431650	FGN456SA400NLF	431626
	500	FGN36SA500NNF	434835	FGN436SA500NNF	434848	FGN46SA500NNF	434884	FGN456SA500NNF	434860
80kA FGH	400	FGH36SA400NLF	431091	FGH436SA400NLF	431168	FGH46SA400NLF	431240	FGH456SA400NLF	431198
	500	FGH36SA500NNF	434612	FGH436SA500NNF	434621	FGH46SA500NNF	434642	FGH456SA500NNF	434627
150kA FGL	400	FGL36SA400NLF	431309	FGL436SA400NLF	431372	FGL46SA400NLF	431449	FGL456SA400NLF	431425
	500	FGL36SA500NNF	434657	FGL436SA500NNF	434758	FGL46SA500NNF	434806	FGL456SA500NNF	434764
One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle elongator + Rating plug + Breaker finishing covers + Fixation hardware									



Selective Electronic Trip Unit (SMR1) with Rating Plug, without Overload (LT) protection

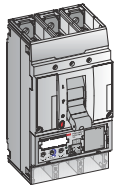
	In (A)	3 pole 3 trips		4 pole 3 trips ⁽¹⁾					
50kA FGN	500	FGN36BM500NNF	434690	FGN436BM500NNF	434696				
80kA FGH	500	FGH36BM500NNF	434666	FGH436BM500NNF	434672				
150kA FGL	500	FGL36BM500NNF	434678	FGL436BM500NNF	434684				
One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle elongator + Rating plug + Breaker finishing covers + Fixation hardware									

(1) Neutral on the left. If neutral on the right is needed, please contact us.

(2) Specifically configured for use with Switchable Rating Plug only.

FG630 - Complete circuit breaker

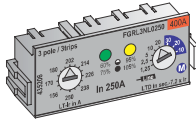
Modular Electronic Trip Unit (SMR2) without Rating Plug



	In (A)	3 pole		4 pole ⁽¹⁾		Cat. no.	Ref. no.	Cat. no.	Ref. no.
		Cat. no.	Ref. no.	Cat. no.	Ref. no.				
50kA FGN	400	FGN36KA400NLF	436157	FGN46KA400NLF	436161				
	500 ⁽²⁾	FGN36KA500NNF	434824	FGN46KA500NNF	434872				
	630	FGN36KA630NNF	436158	FGN46KA630NNF	434092				
80kA FGH	400	FGH36KA400NLF	436152	FGH46KA400NLF	434043				
	500 ⁽²⁾	FGH36KA500NNF	434606	FGH46KA500NNF	434633				
	630	FGH36KA630NNF	434028	FGH46KA630NNF	434044				
150kA FGL	400	FGL36KA400NLF	434051	FGL46KA400NLF	436155				
	500 ⁽²⁾	FGL36KA500NNF	434651	FGL46KA500NNF	434782				
	630	FGL36KA630NNF	434052	FGL46KA630NNF	434068				
One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Filler for extension module and battery socket + Breaker finishing covers + Fixation hardware									

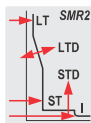
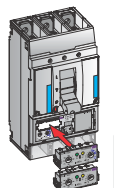
LT: $I_r = 0.625 \times I_n$
LTD: Line & Motor; 8 options

Adjustable LT & LTD settable Rating Plugs for Trip Units SMR2



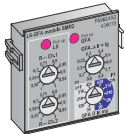
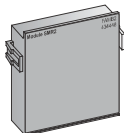
	In (A)	3 pole 3 trips		4 pole 3 trips ⁽¹⁾		4 pole 4 trips ⁽¹⁾		4 pole 3.5 trips (N=50%) ⁽¹⁾	
400A	250	FGRL3NL0250/7	436739	FGRL43NL0250/7	434588	FGRL4NL0250/7	434492	FGRL45NL0250/7	434592
	400	FGRL3NL0400/7	436746	FGRL43NL0400/7	434590	FGRL4NL0400/7	434493	FGRL45NL0400/7	434594
630A	400	FGRL3NN0400/7	436726	FGRL43NN0400/7	434605	FGRL4NN0400/7	434496	FGRL45NN0400/7	434581
	630	FGRL3NN0630/7	436722	FGRL43NN0630/7	434622	FGRL4NN0630/7	434532	FGRL45NN0630/7	434624
500 ⁽²⁾	500 ⁽²⁾	FGRL3NN0500/7	436738	FGRL43NN0500/7	434607	FGRL4NN0500/7	434502	FGRL45NN0500/7	434597

Modular Electronic Trip Unit (SMR2) with two Adjustable Rating Plugs, setting 0.4 - 1 x In



	In (A)	3 pole 3 trips		4 pole 3 trips ⁽¹⁾		4 pole 4 trips ⁽¹⁾		4 pole 3.5 trips (N=50%) ⁽¹⁾	
50kA FGN	630	FGN36VA630NNF	435146	FGN436VA630NNF	435158	FGN46VA630NNF	435176	FGN456VA630NNF	435167
80kA FGH	630	FGH36VA630NNF	434958	FGH436VA630NNF	434965	FGH46VA630NNF	435003	FGH456VA630NNF	434977
150kA FGL	630	FGL36VA630NNF	435071	FGL436VA630NNF	435091	FGL46VA630NNF	435134	FGL456VA630NNF	435122
One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle elongator + Two rating plugs + Filler for extension module and battery socket + Breaker finishing covers + Fixation hardware									

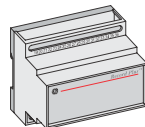
Extension modules for the SMR2 Electronic trip unit Plug-in types replacing the filler module (1 pc max.)



Ammeter with 4 digit LCD display	FAMAM2	436183
Groundfault alarm + Modbus communication	FAMGAM2	436185
Groundfault alarm + 2 channel load shedding device	FAMGAS2	436186
Groundfault alarm + Fault type indicators	FAMGAT2	436187
Groundfault protection + Modbus communication	FAMGFM2	436188
Groundfault protection + 2 channel load shedding device	FAMGFS2	436189
Groundfault protection + Fault type indicators	FAMGFT2	436190
2 channel load shedding device + Modbus communication	FAMSM2	436192
2 channel load shedding device + Fault type indicators	FAMST2	436197
Fault type indicators + Modbus communication	FAMMT2	436191
Spare filler module	FAMB2	434448

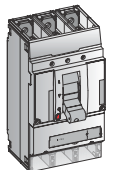
One code covers: A plug-in module and where needed connection hardware

Other Modules



External communication and contact module (4 contacts, 1 A/400V) ⁽³⁾	FAMECM	434013
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One code covers: Module and connection hardware



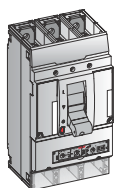
Non-Automatic Circuit Breaker (Switch rated at 40°C)

	In (A)	3 pole		4 pole ⁽¹⁾	
FGY	630	FGY306D630NF	431665	FGY406D630NF	431687
One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle elongator + Breaker finishing covers + Fixation hardware					

(1) Neutral on the left. If neutral on the right is needed, please contact us.

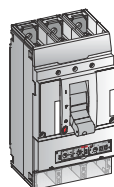
(2) Specifically configured for Motor Protection.

(3) Is needed for Modbus communication (1 per breaker).

FG400 - Complete Circuit Breaker

Selective Electronic Trip Unit (SMR1) with adjustable rating plug for use at 55 ° C

	In (A)	3 pole 3 trips			3 pole 3 trips	
		Cat. no.	Ref. no.		Cat. no.	Ref. no.
50 kA FGN	400	FGN36JA5400LLF	431305	80 kA FGH	FGH36JA5400LLF	431303
One code covers: A standard, fixed front connection breaker + Fixation hardware + Toggle Elongator + Adjustable Rating Plug						

FG630 - Complete Circuit Breaker

Selective Electronic Trip Unit (SMR1) with adjustable rating plug for use at 55 ° C

	In (A)	3 pole 3 trips			3 pole 3 trips	
		Cat. no.	Ref. no.		Cat. no.	Ref. no.
50 kA FGN	500	FGN36JA5500NNF	431304	80 kA FGH	FGH36JA5500NNF	431301
One code covers: A standard, fixed front connection breaker + Fixation hardware + Toggle Elongator + Adjustable Rating Plug						

FG frame

Intro

A

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C

D


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F

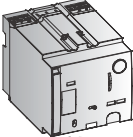
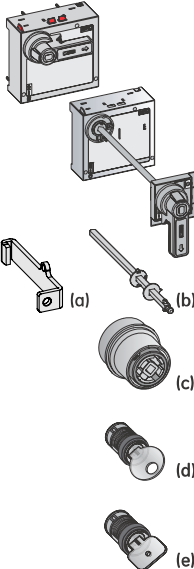
G

X

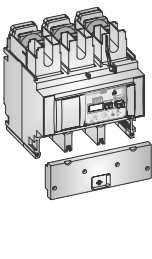

FG - Internal accessories

Contacts	Normally open		Normally closed		Cat. no.	Ref. no.
	Cat. no.	Ref. no.	Cat. no.	Ref. no.		
	Aux. switch right mounted	FAS10R	430837	FAS01R	430831	
	Aux. switch left mounted	FAS10L	430834	FAS01L	430828	
	Bell alarm electronic trip unit	FABAT10	430818	FABAT01	430815	
	Bell alarm mechanism	FABAM10	432003	FABAM01	432000	
	Bell alarm RCD device	FABAT10	430818	FABAT01	430815	
Releases	Shunt		Undervoltage		Delayed undervoltage	
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.
	12V AC/DC	FASHTB	430840	FAUVRB	431960	-
	24V AC/DC	FASHTD	430843	FAUVRD	430861	-
	48V AC/DC	FASHTF	430846	FAUVRF	430864	-
	60V AC/DC	FASHTH	435118	FAUVRH	435120	-
	110 AC/DC	FASHTJ	430849	FAUVRJ	430867	-
	220/240V AC/DC	FASHTN	430852	FAUVRN	430870	FAUVDN 430858
	400/415V AC	FASHTU	430855	FAUVRB	436472	-
	440/480V AC	-	-	FAUVRU	430873	-

FG - Operators

	24V AC/DC	FGEMFD	432817				
	48V AC/DC	FGEMFF	432820				
	60V AC/DC	FGEMFH	432823				
	110/127V AC/DC	FGEMFJ	432826				
	220/250V AC/DC	FGEMFN	432829				
	400/440V AC	FGEMF8	432811				
	Keylock for electr. operator Ronis ⁽¹⁾ (a)	FG1BRE	431404				
Keylock for electr. operator Profalux ⁽¹⁾ (b)	FG1BPE	431403					
	Direct on device		Rotary handle through door or cover plate ⁽²⁾		Panel or door mounted		
	Grey	FGNRF/5	436509	FGNRC/5	436504	-	-
	Red	FGNRFV/5	436510	FGNRCV/5	436505	-	-
	Grey + Early closing Aux. Switches 2xNO ⁽³⁾	-	-	FGNRY/5	436513	-	-
	Red + Early closing Aux. Switches 2xNO ⁽³⁾	-	-	FGNRYV/5	436514	-	-
	Grey	-	-	-	-	FGNRD/5	436506
	Red	-	-	-	-	FGNRDV/5	436507
	Grey + Early closing Aux. Switches 2xNO ⁽³⁾	-	-	-	-	FGNRZ/5	436515
	Red + Early closing Aux. Switches 2xNO ⁽³⁾	-	-	-	-	FGNRZV/5	436516
	Accessories						
	Flex operator adaptor push to trip (a)	FGNFT	432867	Only for use with panel or door mounted type			
	Extension shaft kit (max. 600 mm) (b)	FGNRE	434735	Only for use with panel or door mounted type			
	Adaptor for drawout (c)	FGNRW	433892				
Ronis keylock 1104B nr. BC 1027 ⁽¹⁾ (d)	FA1BR1	430088					
Ronis keylock 1104B nr. BC 1053 ⁽¹⁾ (d)	FA1BR2	430089					
Ronis keylock 1104B nr. BC 2932 ⁽¹⁾ (d)	FA1BR3	430504					
Ronis keylock 1104B nr. BC 2911 ⁽¹⁾ (d)	FA1BR4	430505					
Ronis keylock 1104B nr. BC 2936 ⁽¹⁾ (d)	FA1BR5	430506					
Ronis keylock 1104B nr. BC 2940 ⁽¹⁾ (d)	FA1BR6	430507					
Ronis lock with random key ⁽¹⁾ (d)	FA1BRH	430068					
Profalux lock with random key ⁽¹⁾ (e)	FA1BPH	430813					

FG - Residual current devices

RCD bottom mounted ⁽⁴⁾	3 pole		4 pole	
	Cat. no.	Ref. no.	Cat. no.	Ref. no.
	400/630A Voltage 200/440V AC	FGQDB3M/6	431172	FGQDB4M/6 431181
	400/630A Voltage 400/690V AC	FGQDB3H/6	431163	FGQDB4H/6 431175
	Normally open		Normally closed	
	Cat. no.	Ref. no.	Cat. no.	Ref. no.
	Bell Alarm RCD device	FABAT10	430818	FABAT 01 430815
	One code covers an RCD with: Fixation hardware + Sealable interconnection cover			

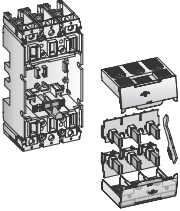
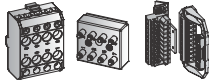
(1) Key included

(2) Add door flange FGPH for door lock options

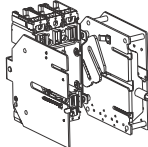
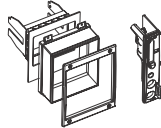

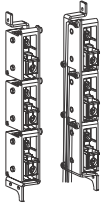
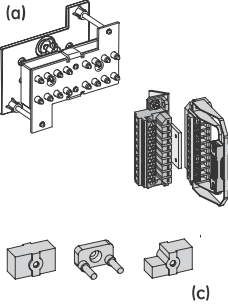
(3) On request 1xNO/1xNC is available.

(4) 100/200V AC execution available on request

FG - Plug-in system

Main system		3 pole		4 pole	
		Cat. no.	Ref. nr.	Cat. no.	Ref. nr.
	Complete set for breaker	FGDDF3	430944	FGDDF4	431064
	Fixed part for breaker	FGDFF3	431983	FGDFF4	431986
	Mobile part for breaker	FGDMP3	432796	FGDMP4	432799
	Complete set: Fixed and mobile part with connection and fixation hardware Fixed part: Fixed base with connection and fixation hardware Mobile part: Mechanism trip device, terminal shields and set of plugs				
	Complete set 8 pole	FAPFM	430824		
	Fixed part 8 pole	FAPF8	430823		
	Mobile part 8 pole	FAPM8	430826		
	10 pole wired plug & socket for plug-in device	FAPPS	430827		
Spares	Set of nutplates and connection bolts (For connection of bases used as spare)	FGJN3	436469	FGJN4	436470

FG- Drawout system

FE - Drawout system		3 pole		4 pole	
		Cat. no.	Ref. nr.	Cat. no.	Ref. nr.
	Complete set for breaker				
	Drawout system for behind door applications	FGWB3	432550	FGWB4	432556
	Through Door Adaption kit with padlocking and keylocking option ⁽²⁾				
	Toggle Operated	FGWT	432592		
	With Motor Operator	FGWM	432595		
	Toggle Operated FE frame FENRC & FENRY	FGWN	432598		
	Adaption kit ONLY with padlocking and keylocking option on door Breaker operation behind door	FAWE	432619		
	Keylocks				
	Keylock for Drawout position RONIS 1104b ⁽³⁾	FA1BRWD	432613		
	Keylock for Drawout position Profalux ⁽³⁾	FA1BPWD	432616		
	Position Indication				
	Set of 3 NO contacts (1 set per position)	FAS30W	432607		
	Set of 3 NO + NG contacts (1 set per position)	FAS33W	432610		
	Set of 3 NO+NC contacts				
	16 pole complete set for Drawout Breaker (a) (Secondary wiring)	FGWA2	432601		
	24 pole complete set for Drawout Breaker (Secondary wiring)	FGWA3	432604		
	10 pole wired plug & socket for Plug-in or Drawout device (b)	FAPPS	430827		
	Rating adustable interlock kit between fixed & Mobile parts (c)	FAPIP	430825		

(1) Only necessary when internal accessories or an electrical operator are used (a maximum of three per FG frame size)

(2) Keylocks not included

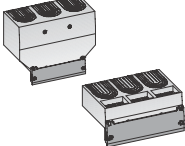

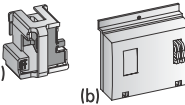

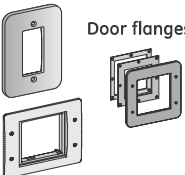
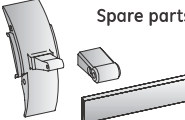
(3) A maximum of two locks can be placed (with through door kits only)

FG - Connections: optional

		3 pole		4 pole	
		Cat. no.	Ref. nr.	Cat. no.	Ref. nr.
 (a) (b) (c)	Extenders				
	Standard flat type	(a) FGBES3	431696	FGBES4	431697
	Heightened type	(b) FGBEH3	431691	FGBEH4	431695
	Twisted 90° c	(c) FGBEA3	431686	FGBEA4	431690
 	Spreader flat ⁽¹⁾				
	Pole spacing 70mm	FGBSS3	431981	FGBSS4	431982
 	Rear connections ⁽¹⁾				
	Set 3 pole (2 short, 1 long)	FGBRC3	431701		
	Set 4 pole (2 short, 2 long)			FGBRC4	431702
	Set 3 pole (3 short)	FGBRCS3	432193		
 	Set 4 pole (4 short)			FGBRCS4	432194
 	Internal box clamps ⁽¹⁾				
	Box Clamp Cu/Al, set 3 pole	FGTCA1327	435107	FGTCA230B	433412
	Box Clamp Cu/Al, set 4 pole	FGTCA1427	435116	FGTCA240B	433413

(1) Set for equipping the line OR load side of breaker.

FG - Installation accessories

Terminal shields (with finishing covers)		3 pole		4 pole	
		Cat. no.	Ref. no.	Cat. no.	Ref. no.
	Long and widened type for spreaders and 690V applications, set of 2 pcs	FGJW3	432861	FGJW4	432864
	Medium, set of 2 pcs.	FGJM3	432846	FGJM4	432849
	Short, set of 2 pcs.	FGJS3	432855	FGJS4	432858
Specific to connection area 	Phase separators, set of 12 pcs	FGJP	432852		
	Backplate (3 or 4pole), set of 2 pcs.	FGJB	432840		
 (a) (b)	Padlocking removable	(a) FG1PR	431409		
	Padlocking fixed	(b) FG1PF	431408		
Circuit indication / coding 	Set of 20 blank labels	FAC	430821		
 Door flanges	RCD unit front face for 3 and 4 pole	FDFF3	430941		
	Front face toggle area	FGFT	432836		
	Rotary handle (through cover plate model)	FGFH	430545		
	Motor operator	FGFE	430544		
 Spare parts		3 pole		4 pole	
	Finishing covers, set of 2 pcs.	FGUA3	432908	FGUA4	432909
	Spare toggle (set of 5 pcs.)	FGUT	433541	FGUT	433541

FG - Accessories electronic trip units SMR1 and SMR2

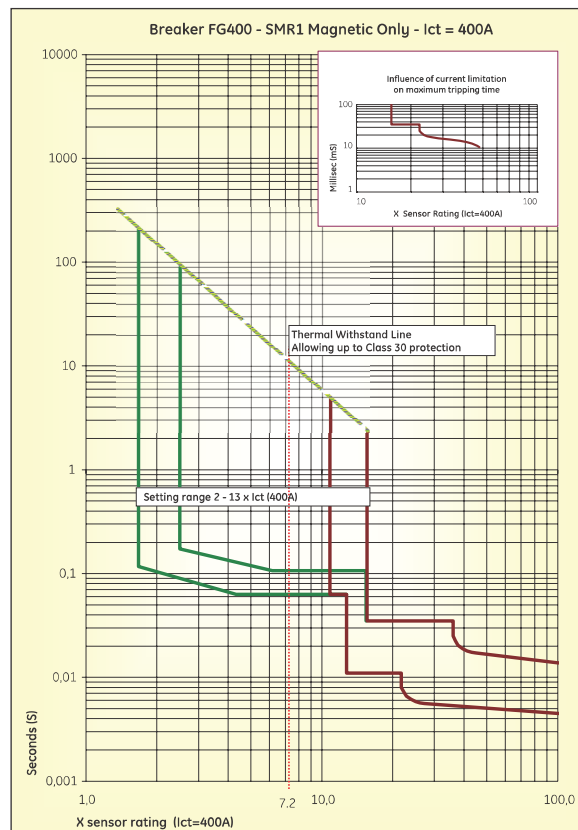
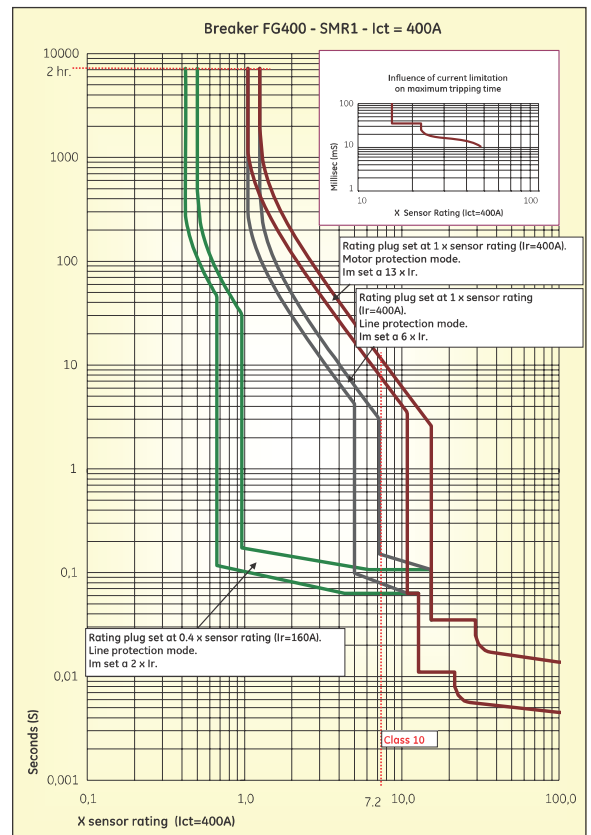
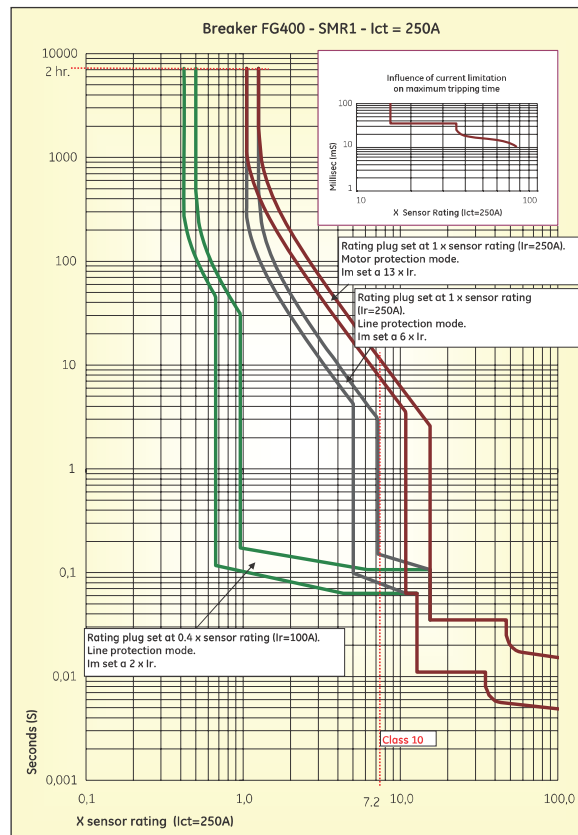
	(a)	Rating plug tool (SMR1 & 2)	(a)	FAR	433500	
		Battery test device (SMR1 & 2)	(b)	FAZ	431406	
	(b)	Long time module (SMR1 only)	(c)	FAMLT1	433376	
	(c)	Ground Fault SMR2 Sensor 250A	(d)	FGGS0250	431870	
		Ground Fault SMR2 Sensor 400A	(d)	FGGS0400	432838	
		(d)	Ground Fault SMR2 Sensor 630A	(d)	FGGS0630	432839

(1) Padlocks not included

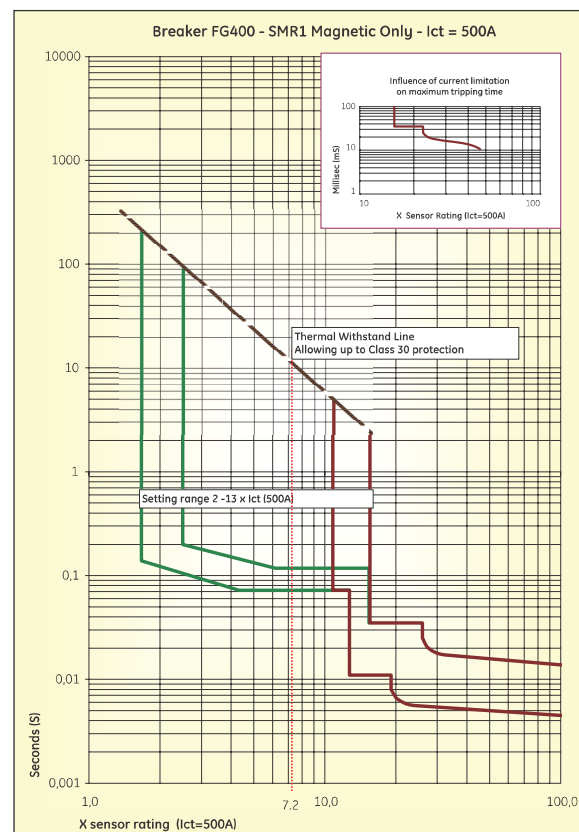
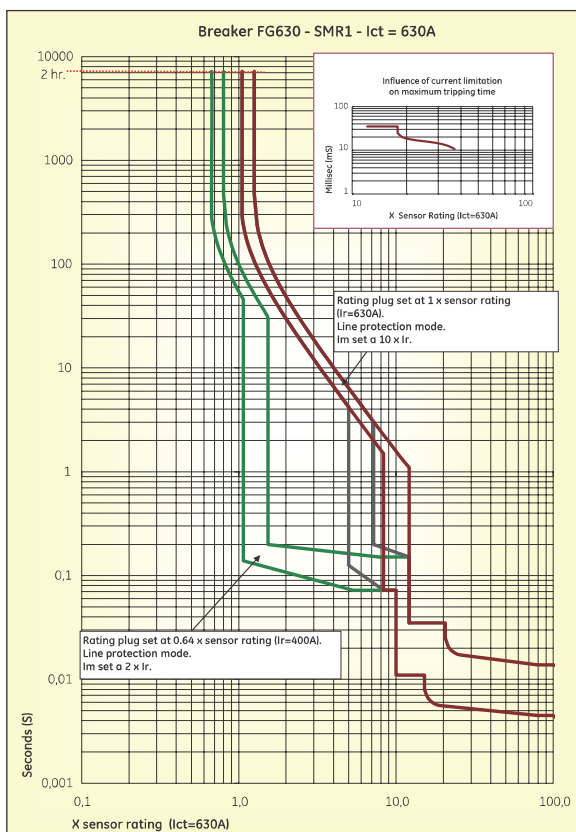
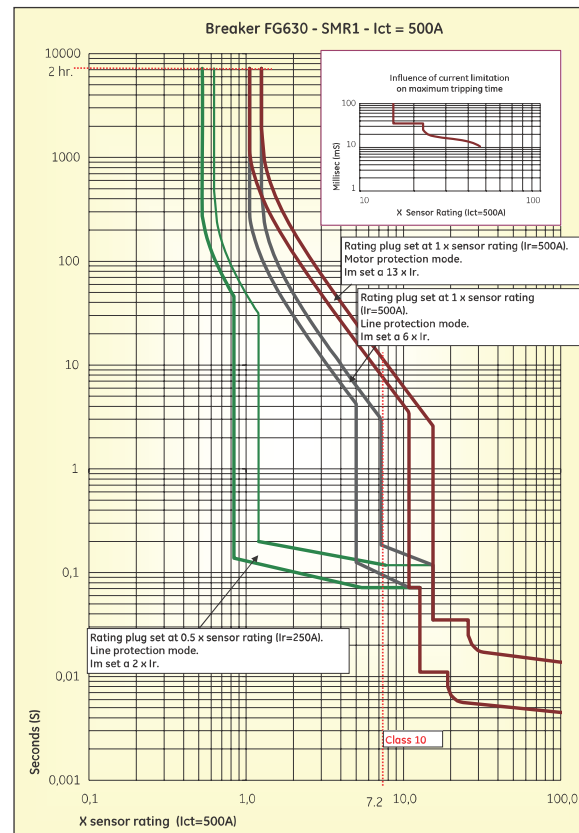
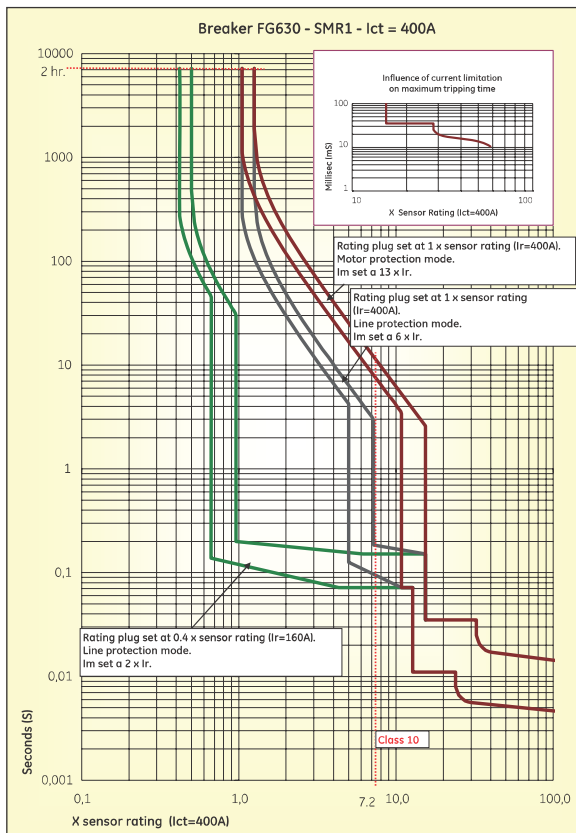
Time Current Curves

FG400 & FG630

Electronic Trip Unit SMR1



Time Current Curves



SMR1 - FG frame

Intro

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Electronic Trip Units

SMR2 range

The SMR2 is an electronic trip unit offering a fixed set of sophisticated protective functions that can be extended at will by the addition of separately available modules. Designed for use with the FG400 and FG630 frame sizes the device has a fixed set of 3 protective functions allowing a selective and fully adjustable protection against Overloads (LT) and short-circuits (ST and I).

Both the LT and ST protection can be set to different time settings or bands (LTD and STD) whilst the ST device can be switched to a energy protection mode (I^2t).

The SMR2 uses rating plugs that give the user the flexibility to make a last minute choice in the required current rating, protected poles or protection band.

A 24V DC auxiliary supply can be connected to the trip unit via the contact module. This enabling all modules to be used to their full capacity and allowing the use of the ZSI function (if installed in the trip unit).

Overload protection LT (long time)

The Long Time or overload protection is adjustable from 0.4 (0.64⁽¹⁾) to 1 x the chosen sensor ratings in 16 (32⁽¹⁾) steps. The user can also define one of 6 time bands (LTD) each designed to match specific loads, motor or cable characteristics. Of these 6 time band settings, 4 have time bands for line applications and 2 are dedicated to motor protection (for time band classes see EN 60 947-4.1). When set to motor protection mode, a phase loss protection is initiated



that will trip the breaker when the difference in current between one phase current and the other phases exceeds 80% for more than two seconds.

This easy-to-adjust trip unit is equipped with a LT load indicator device that operates by means of two LED indicators located on the trip unit front face. If the load reaches a 60% of the set I_r value, a **green LED** will start to blink (3 flashes a second). When the load reaches 75% of I_r it will stop blinking and remain on. The second **orange LED** will start to blink at 95% of the I_r value. It will remain on when the load reaches 105% of I_r and a trip is imminent.

(1) Normally supplied with two rating plugs, each with a setting range of 0.64-1.

(2) Some types limited to 10 x

(3) Some types limited to 11 x

All SMR2 trip units have a built-in temperature sensor that trips the breaker at temperatures above 90°C. It thus prevents the breaker and electrical components in its immediate vicinity from overheating. The SMR2 is also equipped with a so called thermal memory device. This memory tracks overheating even after the device has tripped and prevents the breaker from being switched whilst its environment is still at a too high temperature.

Short-circuit Protection ST (short time)

Offering a selective protection against low value short-circuits the Short Time protection is settable from 1.5 to 12⁽²⁾ x the adjusted LT protection (I_r). The device can be set to five time setting bands (STD), this allowing selectivity between different breaker sizes.

The STD device can be set to an 'energy curve mode'. This mode changes the fixed delay and reaction time value of the device, when the set current level is reached, into a reaction time that depends on the energy flowing in the circuit.

Short-circuit Protection I (instantaneous)

Offering a protection against short-circuits the Instantaneous protection is settable from 2 to 13⁽³⁾ x the chosen sensor rating.

This hi speed tripping device will not react to the first short circuit peak but will only initiate a trip signal after a second short circuit peak is detected. Discrimination is thus always ensured.

All Record Plus devices are equipped with a HIOSC (hi set Instantaneous) protection device. This device mechanically trips the breaker when a short circuit is detected of a value exceeding the capabilities of the breaker in which it is installed and initiates a current limiting interruption of the fault.

The combination of these two protection devices and the unique current limiting properties of the Record Plus breaker improve Selectivity whilst maintaining Current Limitation.

Each SMR2 trip unit comes with a transparent, tamper-free (sealable) cover, this to prevent unauthorized manipulation of the breaker settings. They are supplied as a simple to mount, plug-in electronic pouch (current sensors supplied with the breaker). The device is supplied with an actuator with flux shifter that fits into a pocket in the breaker housing and is then connected to the trip unit. Without a mounted and connected actuator coil the breaker will not function. In order to verify a correct operation of the combination a simple device is available to test the assembly. **We strongly recommend the use of this test device.**

SMR2 range

FG400 & FG630 Advanced Electronic Trip Unit SMR2

Each SMR 2 device has three plug in elements of which at least two are needed to allow the device to work properly.

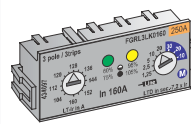
1) A rating plug is plugged into the jack at the top left of the device. Without rating plug the SMR2 device will not provide any circuit protection and the breaker will trip immediately.

2) A battery⁽¹⁾ module (supplied with trip unit) needs to be placed in the appropriate module this to power the thermal memory within the trip unit when the breaker has tripped. If not installed the thermal memory function is disabled. The battery module also enhances the functionality of the Trip Reason Indicator Module. The third, and optional, plug in module is:

3) An Extension module providing extra functionality and/or features. A standard SMR2 is supplied with a blank non function module.

Adjustable rating plug

An SMR2 rating plug has two setting knobs. The first is used for the setting of the overload current device (LT) and has a setting range of 0.625 to 1 x the chosen rating over 16 setpoints. The settings on the devices are in current values thus avoiding the use of complicated multipliers. The second knob is used to set the time delay band of the overload protection (LTD) and has 6 possible time settings.



Each trip unit size can be equipped with one of two available adjustable rating plug types.

There is a version of the trip unit without rating plug and one in which the two rating plug types are included. For 4pole trip units the rating plugs exist in 3 and 4pole protected versions with a choice in neutral rating between 50 or 100% of the phase value.

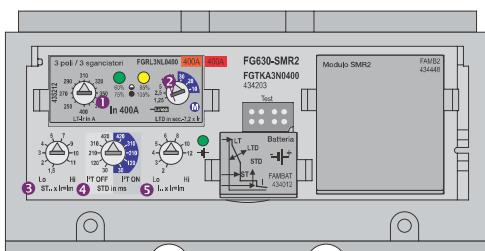
FG frame				Electronic trip unit overview												
				In	LT		ST			I			Neutral protection			
				(A)	pick-up band 1.05÷1.2 Ir		pick-up band ± 20% Ist			pick-up band ± 10% Ii			4P4T	4P 3TN	4P3T	
					Ir setting	min (A)	max (A)	Ist setting	min (A)	max (A)	Ii setting	min (A)	max (A)			
SMR2 + adjustable rating plug	N	H	L	FG400	160	100	160	3	150	1920	5	500	3250	=Ir	=Ir/2	not protected
					250	160	250	1.5-12 Ir	240	3000	2-13 Ict	700	4550	=Ir	=Ir/2	
					250	160	250	10 steps	240	3000	10 steps	700	4550	=Ir	=Ir/2	
					350	250	350	500	3500	2-11 Ict	750	4400	=Ir	=Ir/2		
					400	250	400	1.5-10 Ir	375	4000	10 steps	750	4400	=Ir	=Ir/2	
	FG630	400	250		400	1.5-12 Ir	375	4800	2-13 Ict	1000	6500	=Ir	=Ir/2			
		500	400		500	10 steps	600	6000	10 steps			=Ir	=Ir/2			
		630	400		630	1.5-10 Ir	600	6300	2-11 Ict	1260	6930	=Ir	=Ir/2			
						10 steps			10 steps							
				LTD, Line no phase loss			STD Standard									
				Setting ⁽¹⁾	min (sec.)	max (sec.)	Setting	min (sec.)	max (sec.)							
				1.25	1	1.5	0.04	0.036	0.07							
				2.5	1.5	3	0.12	0.108	0.16							
				5	3	5	0.21	0.190	0.26							
				10	6	10	0.31	0.280	0.37							
							0.42	0.380	0.49							
				LTD, Motor with phase loss protection ⁽¹⁾			-OR- I ² T									
				20	10	14		(see trip curves)								
				30 ⁽²⁾	14	20										

(1) Timing applies at 7.2 x the set current value. (Ir)

(2) Not applicable for 400 & 630A

SMR2 front view

Indicating the location of the settings, the battery, rating plug and extension modules. The in/out put terminals are located within the trip unit pouch just below the battery modules and can be accessed by removing a break away cover.



On switching to Motor Protection a phase loss protection is initiated. Do not use for line protection.

The indicated timings are valid in cold state. Warm state timings take into account the heating of the installation due to current flow and are lower.

(1) Expected life span under normal circumstances three to five years. Replacement type 2 x BR1220 or equivalent.



SMR2 range**FG400 & FG630 Advanced Electronic Trip Unit SMR2 (continued)****Modules**

Each SMR2 device can be equipped with two plug-in elements, a rating plug and an extension module. The extension modules are simple plug-in devices that allow the user to enhance the SMR2 as a protective device or to add in extra functional features. There is a single function module available with Ammeter and a range of functional modules each adding two functions to the device. this allows an SMR 2 to be equipped with:

Ground fault Protection**Ground fault alarm****Load shedding across two channels****Trip Reason indicators****Communication (modbus RTU)**

Each module has a low level electronic output that can be channeled through the communication bus (when present) or in some cases trigger a 1A/250 Volt change-over contact placed in an external contact module containing four contacts (type FAECM2).

Ground fault protection

Designed for protection against indirect contact, the ground fault device measures the vectorial sum of the three phase currents and, if present, that of the neutral conductor. If the sum of these values exceeds the set current thresholds for a period of time greater than the set time delay, the breaker is tripped.

The **Ground Fault** protection option is adjustable from 0.2 to 1 x the chosen sensor ratings in 9 steps. The user can also define one of 5 delay time bands (**GFD**) designed to allow selectivity between different sensor ratings.

The **GFD** device can be set to an 'energy curve mode'. This mode changes the fixed delay and reaction time value of the device, when the set current level is reached, into a reaction time that depends on the energy flowing in the circuit.

A breaker trip due to a ground fault event can be channeled through the communication output (when present) or be wired out to the contact module. (type ECM)

Ground fault alarm

The **Ground Fault Alarm** option offers the same functionality as the Ground Fault protection, here however **ONLY** an alarm signal is given and the breaker is **NOT TRIPPED**. It is adjustable from 0.2 to 0.8 x the chosen sensor ratings in 12 steps. The user can also define one of 5 delay time bands (**GFD**).

The **GFD** device can be set to an 'energy curve mode'. This changes the fixed delay and reaction time value of the device, when the set current level is reached, into a reaction time that depends on the energy flowing in the circuit.

A 100mA/240Volt NC contact is included in the module and can be wired out through the 12 pole breaker connector plug on the breaker.

Load shedding device

The Load Shedding device (**R**) is designed to allow the user to switch off non priority loads before the **LT** function trips the breaker due to an overload. It measures the current within the circuit and provides a signal if the current measured in the three phases exceeds the set current values. The device has two

channels, both adjustable from 0.55 to 1 x the set **LT** protection value (Ir).

Each channel is equipped with a time delay directly proportional to that of the **LTD** setting. Channel 1 is set to a time delay equal to **LTD/2** and channel two is set to a time delay of **LTD/4**. If the current drops below the set thresholds the signal is reset. The reset signal being given in a time proportional with the chosen LTD curve. A signal due to a load shedding event can be channeled through the communication output (when present) or be wired out to the contact module. (type ECM)

Trip Reason Indicators

In order to indicate the reason of a breaker trip a set of tptal of three LED's are provided on the trip unit front face. One indicating a trip due to the **LT** device, one indicating a trip due to the **ST** device and one for the **I** device.

Without auxilliary power, the use of the trip reason button is necessary to light up the appropriate **LED**. With auxilliary power the use of the trip reason push button is unnecessary.

The three trip signals can be channeled through the communication output (when present) or be wired out as an overload (LT) or short circuit signal (ST & I) to the contact module (type FAECM)

Communication

When the communication option is added to the SMR2 trip unit the following data can be viewed:

- The position of the switches on all installed devices, thus providing the settings of the breaker.
- Signals indicating on which of the installed protection devices the breaker has tripped.
- Load shedding orders.
- Zone selective interlock occurrences.

For each breaker with Modbus rtu the use of a internal communication module AND and external contact module type FAECM2 (see page b.28) is required.

A 24V DC auxiliary supply is needed that supplies the system through the external contact module.

Zone Selective Interlock

A device that allows the user to achieve selectivity combined with the fastest possible fault reaction time. When the **ZSI** is active the SMR2 trip unit will always trip the breaker as quickly as possible, ignoring the time delays set by means of the **STD** or **GFD** devices. However, when a **ZSI** signal is received from a downstream breaker equipped with an SMR2, the **STD** or **GFD** of the upstream SMR2 device revert to wherever the adjustment is set.

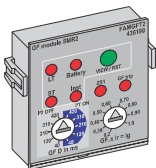
With standard cables the distance between breakers is a maximum of 30 meters. The use of shielded cables allows the distance between breakers to be increased to 1 km. A maximum of five SMR2 trip units can be linked in this manner.

The ZSI option requires a 24VDC auxiliary supply. One FAECM2 module connected with one of the breakers in the ZSI loop can be used. The FAECM2 needs then connected to an auxiliary supply of 24V DC.

When the breaker is equipped with a "COM" option the ZSI status signal is also available on the communication output.

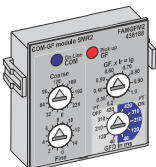
Ammeter

Provides the user with the current running in one of the breaker phases. The device has an accuracy of 10% and normally indicates the current in the highest loaded phase. Use of the push buttons on the module front allows the user to select an indication of the current in one of the other phases or neutral (if present). After a set delay of 10 seconds the device reverts to its standard indication setting.



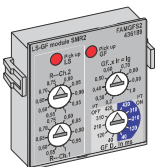
Module FAMGFT2

A combination of the Ground Fault protection and the Trip Reason indicators.



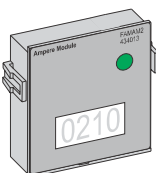
Module FAMGFM2

A combination of the Ground Fault protection and the communication option.



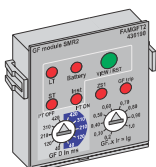
Module FAMGFS2

A combination of the Ground Fault protection and the load shedding device.



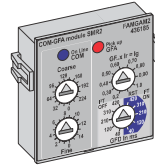
Module FAMAM2

An Ammeter.



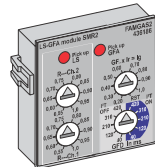
Module FAMGAT2

A combination of the Ground Fault Alarm function and the Trip Reason Indicators.



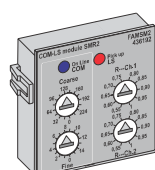
Module FAMGAM2

A combination of the Ground Fault alarm function and the communication option.



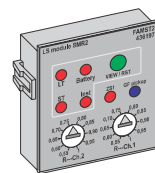
Module FAMGAS2

A combination of the Ground Fault alarm option and the load shedding device.



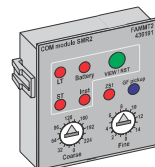
Module FAMSM2

A combination of the load shedding device and the communication option.



Module FAMST2

A combination of the load shedding device and the Trip Reason Indicators.

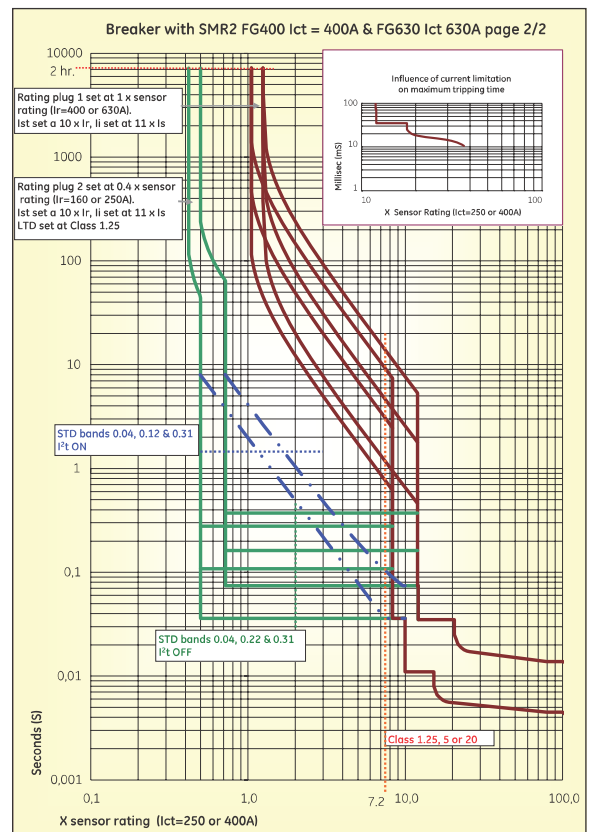
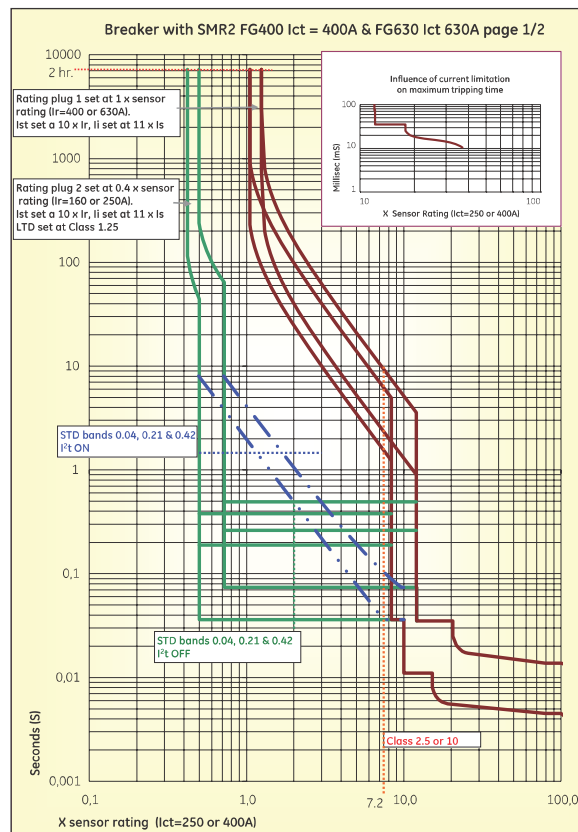
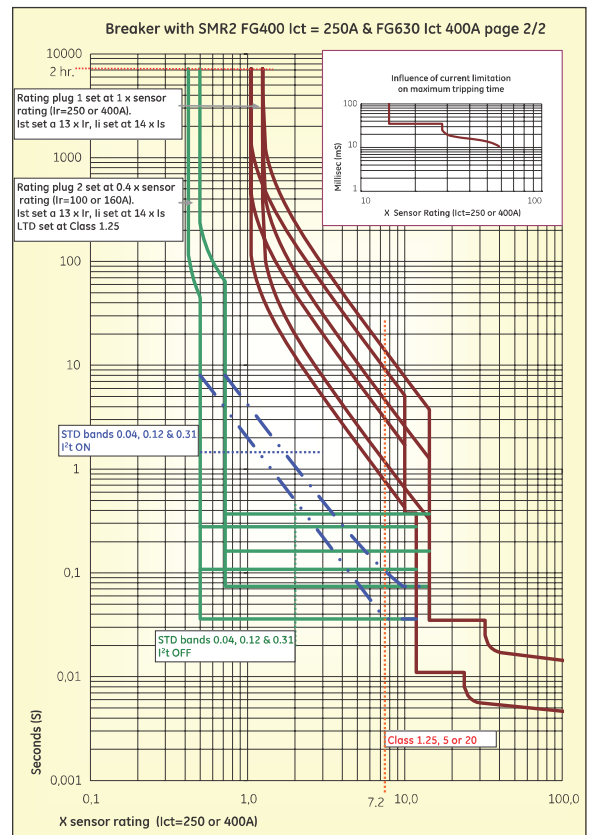
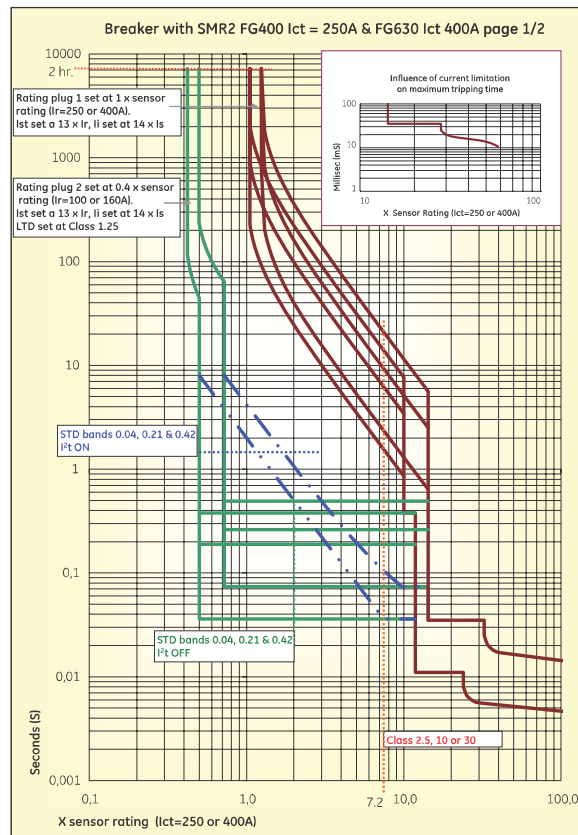


Module FAMMT2

A combination of the communication option and the Trip Reason Indicators.

Time Current Curves

FG400 & FG630 Electronic Trip Unit SMR2



Time Current Curves

