FK Frame

Breaking capacities

Icu 400/415V AC in kA eff.

Type	V	N	H	L
FK800	50	50	80	100
FK1250	50	50	80	100
FK1600	50	50	80	

Protection

Trip Unit	Rated Current (A)	LTM	Mag Break™	SMR1e(1)	SMR1s(1)	SMR1g(1)
FK800	630	N, H, L	-	-	-	-
	800	N, H, L	N, H, L	N, H, L	N, H	N, H
FK1250	1000	N, H, L	-	N, H, L	N, H	N, H
	1250	N, H, L	N, H, L	N, H, L	N, H	N, H
FK1600	1600	-	-	N, H	N, H	N, H

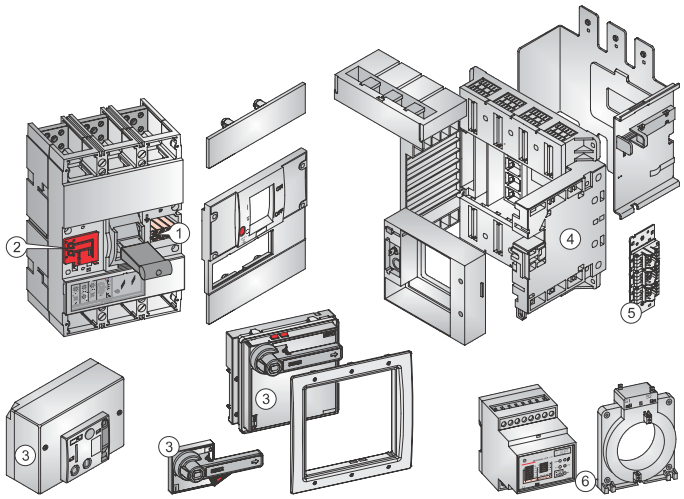
Number of poles / protected poles (trips)					
3 pole 3 trips	N, H, L	N, H, L	N, H, L	N, H	N, H
4 pole 3 trips	N, H, L	N, H, L	-	-	-
4 pole 4 trips(1)	-	-	N, H, L	N, H	N, H

(1) Switchable, 0%, 50% or 100% neutral protection

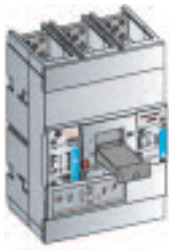
LTM
Line thermal magnetic protection
SMR1e
Selective electronic protection.
SMR1s
Selective electronic protection with enhanced functionality
SMR1g
Selective electronic protection with enhanced functionality and ground fault
Mag Break™
Magnetic only breaker for motor protection
Y
Non Automatic or switch (not mentioned in tables)

Accessories (main types)

① A maximum of one Bell Alarm contact AND 3 aux. contacts (all of CO type)
② Shunt or Undervoltage release
③ Operators
Rotary handle
OR
Electrical operator
④ Draw-out system
⑤ Connectors for auxiliary wiring
⑥ RCD with separate sensor

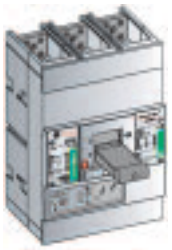


FK800 - Complete circuit breaker



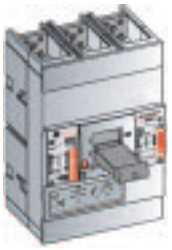
Selective Electronic Trip Unit with fixed time settings type SMR1e

	In (A)	3 pole 3 trips Cat. no.	3 pole 3 trips Ref. no.	4 pole[1] N selectable 0-50-100% Cat. no.	4 pole[1] N selectable 0-50-100% Ref. no.
50kA FKV	800	FKV36NE800PPF	435041	FKV46NE800PPF	435042
50kA FKN	800	FKN36NE800PPF	435393	FKN46NE800PPF	435447
80kA FKH	800	FKH36NE800PPF	435285	FKH46NE800PPF	435339
100kA FKL	800	FKL36NE800PPF	435390	FKL46NE800PPF	435282
	One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware				



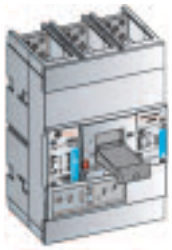
Selective Electronic Trip Unit with adjustable time settings type SMR1s

	In (A)	3 pole 3 trips		4 pole[1] N selectable 0-50-100%	
50kA FKN	800	FKN36NS800PPF	435429	FKN46NS800PPF	435483
80kA FKH	800	FKH36NS800PPF	435321	FKH46NS800PPF	435375
	One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware				



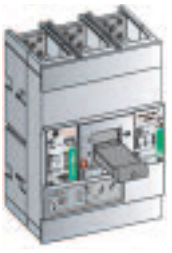
Selective Electronic Trip Unit with adjustable time settings and Groundfault type SMR1g

	In (A)	3 pole 3 trips		4 pole[1] N selectable 0-50-100%	
50kA FKN	800	FKN36NG800PPF	435411	FKN46NG800PPF	435465
80kA FKH	800	FKH36NG800PPF	435303	FKH46NG800PPF	435357
	One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware				



Line Thermal magnetic trip unit LTM (adjustable settings)

	In (A)	3 pole 3 trips		4 pole 3 trips[2]	
50kA FKV	800	FKV36NT800PPF	435005	FKV46NT800PPF	435064
50kA FKN	630	FKN36NT630PF	435444	FKN436NT630PF	435408
	800	FKN36NT800PF	435336	FKN436NT800PF	435300
80kA FKH	630	FKH36NT630PF	435426	FKH436NT630PF	435462
	800	FKH36NT800PF	435318	FKH436NT800PF	435354
100kA FKL	630	FKL36NT630PF	435480	FKL436NT630PF	435534
	800	FKL36NT800PF	435372	FKL436NT800PF	435535
	One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware				

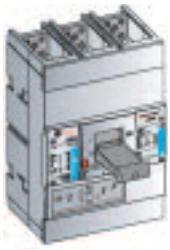


Motor Protection (Mag Break™) Magnetic Only Breaker

	In (A)	3 pole 3 trips		4 pole 3 trips[2]	
50kA FKN	800	FKN36NM800PF	435537	FKN436NM800PF	435541
80kA FKH	800	FKH36NM800PF	435538	FKH436NM800PF	435542
100kA FKL	800	FKL36NM800PF	435539	FKL436NM800PF	435543
	One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware				

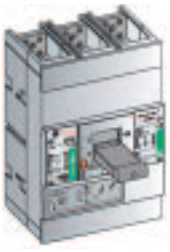
(1) Switchable 0%, 50% or 100% neutral protection, neutral on left.
(2) Neutral on left

FK1250 - Complete circuit breaker



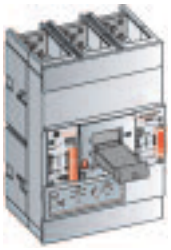
Selective Electronic Trip Unit with fixed time settings type SMR1e

	In (A)	3 pole 3 trips Cat. no.	Ref. no.	4 pole[1] N selectable 0-50-100% Cat. no.	Ref. no.
50kA FKV	1000	FKV36NE100SQF	435040	FKV46NE100SQF	435066
	1250	FKV36NE125SSF	435035	FKV46NE125SSF	435083
	One code covers: A standard fixed front connection breaker - Assembled trip unit - fixation hardware (Electrical Operator not possible)				
50kA FKN	1000	FKN36NE100SQF	435396	FKN46NE100SQF	435450
	1250	FKN36NE125SSF	435384	FKN46NE125SSF	435438
80kA FKH	1000	FKH36NE100SQF	435288	FKH46NE100SQF	435342
	1250	FKH36NE125SSF	435276	FKH46NE125SSF	435330
100kA FKL	1000	FKL36NE100SQF	435545	FKL46NE100SQF	435547
	1250	FKL36NE125SSF	435546	FKL46NE125SSF	435549
	One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware				



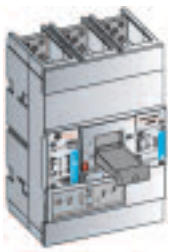
Selective Electronic Trip Unit with adjustable time settings type SMR1s

	In (A)	3 pole 3 trips Cat. no.	Ref. no.	4 pole[1] N selectable 0-50-100% Cat. no.	Ref. no.
50kA FKN	1000	FKN36NS100SQF	435432	FKN46NS100SQF	435486
	1250	FKN36NS125SSF	435420	FKN46NS125SSF	435474
80kA FKH	1000	FKH36NS100SQF	435324	FKH46NS100SQF	435378
	1250	FKH36NS125SSF	435312	FKH46NS125SSF	435366
	One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware				



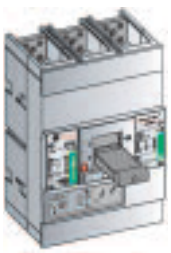
Selective Electronic Trip Unit with adjustable time settings and Groundfault type SMR1g

	In (A)	3 pole 3 trips Cat. no.	Ref. no.	4 pole[1] N selectable 0-50-100% Cat. no.	Ref. no.
50kA FKN	1000	FKN36NG100SQF	435414	FKN46NG100SQF	435468
	1250	FKN36NG125SSF	435402	FKN46NG125SSF	435456
80kA FKH	1000	FKH36NG100SQF	435306	FKH46NG100SQF	435360
	1250	FKH36NG125SSF	435294	FKH46NG125SSF	435348
	One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware				



Line Thermal magnetic trip unit LTM (adjustable settings)

	In (A)	3 pole 3 trips Cat. no.	Ref. no.	4 pole 3 trips[2] Cat. no.	Ref. no.
50kA FKV	1000	FKV36NT100SF	435028	FKV46NT100SF	435086
	1250	FKV36NT125SF	435030	FKV46NT125SF	435089
	One code covers: A standard fixed front connection breaker - Assembled trip unit - fixation hardware (Electrical Operator not possible)				
50kA FKN	1000	FKN36NT100SF	435550	FKN436NT100SF	435562
	1250	FKN36NT125SF	435551	FKN436NT125SF	435563
80kA FKH	1000	FKH36NT100SF	435553	FKH436NT100SF	435565
	1250	FKH36NT125SF	435554	FKH436NT125SF	435566
100kA FKL	1000	FKL36NT100SF	435555	FKL436NT100SF	435567
	1250	FKL36NT125SF	435557	FKL436NT125SF	435569
	One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware				

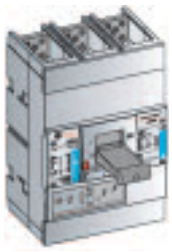


Motor Protection (Mag Break™) Magnetic Only Breaker

	In (A)	3 pole 3 trips Cat. no.	Ref. no.	4 pole 3 trips[2] Cat. no.	Ref. no.
50kA FKN	1250	FKN36NM125SF	435558	FKN436NM125SF	435570
80kA FKH	1250	FKH36NM125SF	435559	FKH436NM125SF	435571
100kA FKL	1250	FKL36NM125SF	435561	FKL436NM125SF	435573
	One code covers: A standard fixed front connection breaker + Assembled dummy trip unit + Toggle elongator + Breaker finishing covers + Fixation hardware				

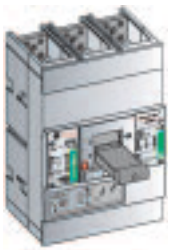
(1) Switchable 0%, 50% or 100% neutral protection, neutral on left.
(2) Neutral on left

FK1600 - Complete circuit breaker



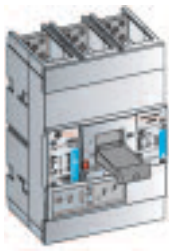
Selective Electronic Trip Unit with fixed time settings type SMR1e

	In (A)	3 pole 3 trips Cat. no.	Ref. no.	4 pole(1) N selectable 0-50-100% Cat. no.	Ref. no.
50kA FKV	1600	FKV36NE160TTF	435032	FKV46NE160TTF	435092
	One code covers: A standard fixed front connection breaker - Assembled trip unit - fixation hardware (Electrical Operator not possible)				
50kA FKN	1600	FKN36NE160TTF	435387	FKN46NE160TTF	435441
80kA FKH	1600	FKH36NE160TTF	435279	FKH46NE160TTF	435333
	One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware				



Selective Electronic Trip Unit with adjustable time settings type SMR1s

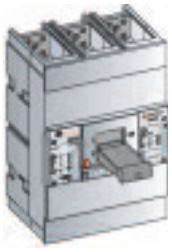
	In (A)	3 pole 3 trips		4 pole(1) N selectable 0-50-100%	
50kA FKN	1600	FKN36NS160TTF	435423	FKN46NS160TTF	435477
80kA FKH	1600	FKH36NS160TTF	435315	FKH46NS160TTF	435369
	One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware				



Selective Electronic Trip Unit with adjustable time settings and Groundfault type SMR1g

	In (A)	3 pole 3 trips		4 pole(1) N selectable 0-50-100%	
50kA FKN	1600	FKN36NG160TTF	435405	FKN46NG160TTF	435459
80kA FKH	1600	FKH36NG160TTF	435297	FKH46NG160TTF	435351
	One code covers: A standard fixed front connection breaker + Assembled trip unit + Toggle Elongator + Breaker finishing covers + Fixation hardware				

FKY- Non-Automatic circuit breaker (Switch)

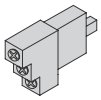


	In (A)	3 pole Cat. no.	Ref. no.	4 pole(2) Cat. no.	Ref. no.
FKY	800	FKY306DN800PF	435495	FKY406DN800PF	435504
	1000	FKY306DN100SF	435381	FKY406DN100SF	435273
	1250	FKY306DN125SF	435489	FKY406DN125SF	435498
	1600	FKY306DN160TF	435492	FKY406DN160TF	435501
	One code covers: A standard fixed front connection breaker + Assembled dummy trip unit + Toggle elongator + Breaker finishing covers + Fixation hardware				

(1) Switchable 0%, 50% or 100% neutral protection, neutral on left.
(2) Neutral on left

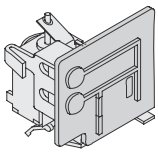
FK - Internal accessories

Contacts



	Changeover					
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.
Aux. switch right mounted CO	FNS11R	**436401**				
Bell alarm contact right mounted CO	FNBA11R	**435761**				

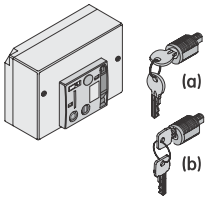
Releases



	Shunt		Undervoltage		Delayed undervoltage	
24V AC/DC	FNSHTD	**435693**	-	-	-	-
24 V AC	-	-	FNUVR1	**435698**	-	-
24 V DC	-	-	FNUVRD	**435701**	-	-
48 V AC/DC	FNSHTF	**435694**	-	-	-	-
48V /DC	-	-	FNUVRF	**435702**	-	-
110/130V AC/DC	FNSHTJ	**435695**	-	-	-	-
230V AC	-	-	FNUVR6	**435699**	-	-
220/240V AC - 220/2450V DC	FNSHTN	**435696**	-	-	-	-
400V AC	-	-	FNUVR8	**435700**	-	-
380/440V AC/DC	FNSHT8	**435692**	-	-	-	-
230V AC	-	-	-	-	FNUVD6	**435697**

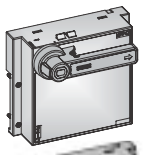
FK - Operators

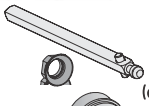
Electrical operators



		Field Mountable Standard model for FK800 & FK1250		Field Mountable Standard model for FK1600		Factory fitted "HI-Speed closing" Model	
24V AC/DC						FNEMFD/M	**436322**
24V AC		FKMF1P	**436880**	FKF1S	**436884**		
48V AC/DC						FNEMFF/M	**436321**
48V AC		FKMF2P	**436881**	FKF2S	**436885**		
110V AC		FKMF3P	**436882**	FKF3S	**436886**	FNEMF3/M	**436323**
110V DC						FNEMFJ/M	**436458**
230V AC		FKMF6P	**436883**	FKF6S	**436887**	FNEMF6/M	**436324**
230V DC						FNEMFN/M	**436459**
Ronis key lock[1]	(a)	FN1BRE	**435679**	FN1BRE	**435679**	FN1BRE	**435679**
Profalux key lock[1]	(b)	FN1BPE	**435678**	FN1BPE	**435678**	FN1BPE	**435678**

Rotary handles



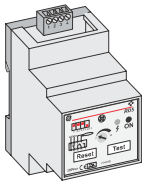


		Direct on device		Rotary handle through door or cover plate[2]		Panel or door mounted	
Grey		FNNRF/5	**436522**	FNNRC/5	**436517**	-	-
Red		FNNRFV/5	**436524**	FNNRCV/5	**436518**	-	-
Grey + Early closing aux. switches 2xNO[3]		-	-	FNNRY/5	**436527**	-	-
Red + Early closing aux. switches 2xNO[3]		-	-	FNNRYV/5	**436528**	-	-
Grey		-	-	-	-	FNNRD/5	**436519**
Red		-	-	-	-	FNNRDV/5	**436520**
Grey + Early closing aux. switches 2xNO[3]		-	-	-	-	FNNRZ/5	**436530**
Red + Early closing aux. switches 2xNO[3]		-	-	-	-	FNNRZV/5	**436531**

Accessories					
Extension shaft kit (max. 600 mm)	(a)	FNNRE	**435738**	Only for use with panel or door mounted type	
Adaptor for drawout	(b)	FNNRW	**435745**		
Ronis keylock 1104B nr. BC 1027[1]	(c)	FA1BR1	**430088**		
Ronis keylock 1104B nr. BC 1053[1]	(c)	FA1BR2	**430089**		
Ronis keylock 1104B nr. BC 2932[1]	(c)	FA1BR3	**430504**		
Ronis keylock 1104B nr. BC 2911[1]	(c)	FA1BR4	**430505**		
Ronis keylock 1104B nr. BC 2936[1]	(c)	FA1BR5	**430506**		
Ronis keylock 1104B nr. BC 2940[1]	(c)	FA1BR6	**430507**		
Ronis lock with random key[1]	(c)	FA1BRH	**430068**		
Profalux lock with random key[1]	(d)	FA1BPH	**430813**		

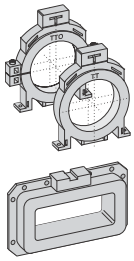
(1) Key included
(2) Add door flange FGFH for door lock options
(3) On request 1xNO/1xNC is available.

FK - Residual current devices



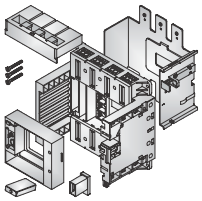
Relay	IΔn	Operating voltage	Settable delay	Nr. of modules	Cat. no.	Ref. no.	Pack.
RD5	0,03 ... 1A	110V AC	0 - 1 s	3	RD5 110	**704175**	1
	0,03 ... 1A	220V AC	0 - 1 s	3	RD5 220	**704169**	1
	0,03 ... 1A	380V AC	0 - 1 s	3	RD5 380	**704176**	1
RD6	0,2 ... 5A	110V AC	0,5 - 5 s	3	RD6 110	**704178**	1
	0,2 ... 5A	220V AC	0,5 - 5 s	3	RD6 220	**704177**	1
	0,2 ... 5A	380V AC	0,5 - 5 s	3	RD6 380	**704179**	1
RD1D	0,01 ... 5A	110V AC	0 - 3 s	3	RD1D 110	**872225**	1
	0,01 ... 5A	220/230V AC	0 - 3 s	3	RD1D 220	**872224**	1
	0,01 ... 5A	380/400V AC	0 - 3 s	3	RD1D 380	**872226**	1
Frame allowing front mounting of RD5, RD6 and RD1D types					RDFR	**872227**	1

Sensor



Sensor	Ø internal (mm) (internal opening)	A		Cat. no.	Ref. no.	Pack.
Round	22	125	closed	TTD 22	**560090**	1
	35	125	closed	TT 35	**872754**	1
	60	160	closed	TT 60	**872755**	1
	80	160	closed	TT 80	**872756**	1
	110	250	closed	TT 110	**872757**	1
	160	400	closed	TT 160	**872758**	1
	210	630/800	closed	TT 210	**872759**	1
	60	160	open	TTO 60	**872760**	1
	110	250	open	TTO 110	**872761**	1
	210	630/800	open	TTO 210	**872762**	1
Rectangular	70x175	-	closed	BTR 175	**704154**	1
	115x305	-	closed	BTR 305	**704155**	1
	130x350	-	closed	BTR 350	**704156**	1

FK - Draw-out system

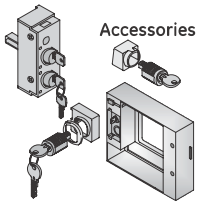


Main system

	3 pole		4 pole	
Model with front connection				
Complete set for FK800	FNWS3WP	**433434**	FNWS4WP	**436481**
Complete set for FK1250 & FK1600	FNWS3WT	**436482**	FNWS4WT	**433442**
Model with rear connection				
Complete set for FK800	FNWS3AP	**433436**	FNWS4AP	**433440**
Complete set for FK1250 & FK1600	FNWS3AT	**435757**	FNWS4AT	**435759**
One code covers the fixed and withdrawable portion of the drawout system, a doorframe with extended toggle operator, mounting accessories and fixation hardware.				

Auxiliary disconnects (Sec. wiring)

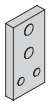
Complete set 6 pole	FNPFM	**435758**		



Accessories

Kit for mounting two keylocks on Chassis with one type Ronis 1104A lock[1]	FN1BRW1	**435575**		
Provision for 1 extra keylock on Chassis type Ronis 1104A[1]	FN1BRW2	**435577**		
Position Indication Contact 1 X CO, for withdrawn and/or plugged in position.	FNS11L	**435760**		
Spare doorframe for Drawout type	FNFW	**435578**		
Provision for first keylock in doorframe type Ronis 1104A[1]	FN1BRY1	**433415**		
Provision for second keylock in doorframe type Ronis 1104A[1]	FN1BRY2	**435574**		

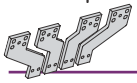
FK - Connections: optional



Terminal extenders[2]

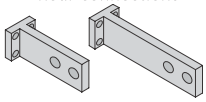
	3 pole		4 pole	
Flat FK800 - FK1250	FNBES3P	**435706**	FNBES4P	**435707**
Flat FK1250 -FK 1600	FNBES3R	**433420**	FNBES4R	**433422**

Terminal spreader flat[2]

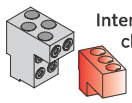


Flat FK800 - FK1250	FNBSS3P	**435708**	FNBSS4P	**435711**
Flat FK1250 -FK 1600	FNBSS3R	**435710**	FNBSS4R	**435712**

Rear connections[2]



Set 3 pole (2 short, 1 long)	FNBRC3	**433423**	-	-
Set 4 pole (2 short, 2 long)	-	-	FNBRC4	**433425**
Set 3 pole (3 short)	FNBRCS3	**433426**	-	-
Set 4 pole (4 short)	-	-	FNBRCS4	**433427**

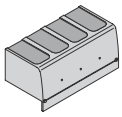
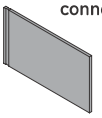
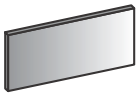
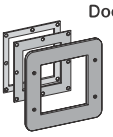
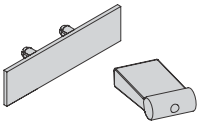


Internal box clamps[2]

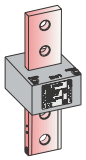
Box Clamp Cu/Al, for 3 x 70-240 sq.mm.	FNTCA3327	**436316**	FNTCA3427	**436651**
Box Clamp Cu/Al, for 4 x 70-240 sq.mm.	FNTCA4327	**433438**	FNTCA4427	**433439**

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

FK - Installation Accessories

		3 pole		4 pole	
		Cat. no.	Ref. no.	Cat. no.	Ref. no.
Terminal shields (with finishing covers) 	Long, set of 2 pcs.	FNJL3	**435716**	FNJL4	**435719**
Specific to connection area 	**Phase separators**				
	Set of 12 pcs for rear connected breaker	FNJP	**435722**		
	Set of 12 pcs for front connected breaker	FNJF	**434804**		
Padlocking devices for toggle operator[1] 	Padlocking removable	FN1PR	**433417**		
Circuit indication / coding 	Set of 20 blank labels	FAC	**430821**		
Door flanges 	**For FK frame in Fixed version**				
	Toggle area	FNFT	**435715**		
	Rotary Handle Operator (Through Door Model)	FNFH	**435714**		
	Motor Operator	FNFE	**435713**		
Spare parts 	Finishing covers (set of 2 pieces)	FNUA3	**435762**	FNUA4	**435763**
	Spare toggle (set of 5 pieces)	FNUT	**435764**		

FK - Accessories electronic trip units



Sensor 800A for Ground fault device	FNGS0800	**433419**
Sensor 1000A for Ground fault device	FNGS1000	**433421**
Sensor 1250A for Ground fault device	FNGS1250	**435709**
Sensor 1600A for Ground fault device	FNGS1600	**436471**

TESTKIT
The Electronic trip units SMR1e, s & g can be tested by means of a PC driven software. Please contact us for availability.

(1) Padlocks not included

Electronic trip units

FK800 - FK1600 Electronic Trip Unit SMR1e, s & g

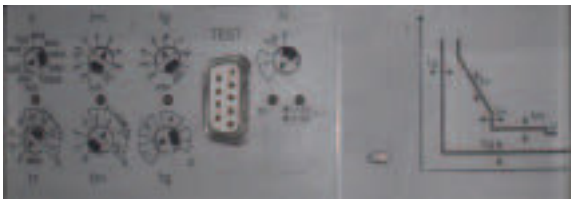
Non inter changeable electronic Trip Units designed to allow the user to conveniently tailor the protection device to match individual circuit requirements. The available options include adjustable overload pickup values, overload trip time characteristics, short time pick-up circuit values, short time delay circuit trip times and energy values. The trip unit can be equipped with a ground-fault protection and provides a flexible solution to all protection scenarios.

This easy-to-use trip unit with overload and selective short-circuit protection is equipped with an overload signalling option and has a built-in temperature sensor to prevent the breaker and electrical components in its immediate vicinity from overheating. The 4 pole units are equipped with a switchable neutral protection option, allowing the user to set the neutral at 0,50 or 100% of the phase ratings.

Overload Protection (LT or Long Time)
Designed to meet the newest IEC 60 364 installation regulations all variants can trip the breaker with 5 seconds at 8 times the LT setting (Ir). The SMR1e is supplied with this 5 second time band whilst the SMR1s and g variants have 4 selectable time bands that trip the breaker within 5, 10, 20 or 30 seconds. The device is adjustable from 0.4 to 1 x the breaker (In) or Ict rating in 9 steps.

All SM1e, s or g trip units have LED's indicating that the Trip unit has powered up (green) and a second LED that provides information on a imminent tripping event. This LED flashes at three times a second when the current reaches 95% of the breaker setting (Ir) and will remain fully lit when 105% of this values is reached. If the temperature in the electronic circuits reaches 75 degrees centigrade both LED's light up simultaneously whilst a trip is initiated once the temperature exceeds a 90 degree centigrade limit.

A third LED located in the vicinity of the LT setting knob indicates a breaker trip on an overload event.



Timed Short Cicuit Protection (ST or Short Time)
Offering a selective protection against low value short-circuits the **S**hort **T**ime protection is settable from 1.5 to 10 x the adjusted LT protection (Ir).
The SMR1e has a fixed time band of 100 millisecond`s.
A setting that allows discrimination with downstream FG devices.
Tthe SMR1s and g variants have a choice of four time setting bands (**STD**), designed to allow selectivity between different breaker sizes. Here the **STD** device can be set to an 'energy curve mode' that changes the reaction of the device from a fixed delay and reaction time value when the set current level is reached to a reaction time that depends on the energy flowing in the circuit.

HIOSC Tripping Device (If setting)
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.

This device once combined with unique current limiting propeties of the downsteam Record Plus breaker provide a high level of Selectivity whilst maintaining Current Limitation.

Ground Fault Protection (GF)
Designed for protection under fault conditions the ground fault device measures the vectorial sum of the three phase current and, if procent, 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 **G**round **F**ault protection option is adjustable from 0.2 to 1 x the chosen breaker rating (Ict) in 9 steps. The user can also define one of 4 delay time bands (**GFD**) designed to allow selectivity between different sensor ratings. The groundfault device is available in the SMR1g trip unit type.

Zone Selective Interlock
A device that allows the user to achieve selectivity combined with the fastest possible fault reaction time. With connected ZSI the SMR1s and SMR1g 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 recieved from a downstream breaker equipped with an SMR1 s, 1g or 2 the **STD** or **GFD** of the upstream device are reset to the previously ignored original GFD & STD timings. The Ground Fault and Short Time Zone Selective Interlock signals are shared on one in/out put .
The device only works when auxiliary power is present and operates up to a distance between breakers of 1 kilometer. The use of shielded cable is required. A maximum of five SMR 1s, g or SMR2 trip units can be linked in this manner. (not available in the SMR1e)

Connection of trip unit

Each SMR1s & G Trip Unit has a connector located on the right side of the breaker. This connector is normally hidden behind a break-away cover and is required to connect the following:
Auxiliary power supply (24V DC), ZSI in and out,
long time pre-alarm signal, connection of external CT for 4 pole groundfault on three pole breakers.

SMR1e, s & g Range

FK800- FK1600 Electronic Trip Units

Trip Units are available in 4 ratings and 3 different versions depending on the frame rating and the chosen functionality.

FK800 frame size 50/60 Hz	800A
FK1250 frame size 50/60 Hz	1000 & 1250A
FK1600 frame size at 50/60Hz	1600A

In order to verify the correct operation of the breaker an Trip Unit a PC based software packge is available.

We strongly recommend the use of this option.

FK800, FK1250 and FK1600 breakers - Electronic trip unit overview

FK frame					Electronic trip unit overview									
					In	LT pick-up band 1.05÷1.3 Ir			ST pick-up band ± 20% Im			Neutral protection Switchable type		
					(A)	Ir setting	min (A)	max (A)	Im setting	min (A)	max (A)	4P4T	4P 3TN	4P3T
SMR 1e	N	H	L	FK800	800	0.4-1 x In in 9 steps	320	800	1.5-10 Ir in 9 steps	480	8000	=Ir	=Ir/2	not protected
				FK1250	1000		400	1000		600	100000	=Ir	=Ir/2	
					1250		500	1250		750	12500	=Ir	=Ir/2	
				FK1600	1600		640	1600		960	16000	=Ir	=Ir/2	

					In	LT pick-up band 1.05÷1.3 Ir			ST pick-up band ± 20% Im			Neutral protection Switchable type		
					(A)	Ir setting	min (A)	max (A)	Im setting	min (A)	max (A)	4P4T	4P 3TN	4P3T
SMR 1s	N	H		FK800	800		320	800		480	8000	=Ir	=Ir/2	not protected
				FK1250	1000		400	1000	1.5-10 Ir in 9 steps	600	100000	=Ir	=Ir/2	
					1250		500	1250		750	12500	=Ir	=Ir/2	
				FK1600	1600		640	1600		960	16000	=Ir	=Ir/2	

						LTD(1)			STD(2)		
						Setting	min (sec.)	max (sec.)	Setting	min (sec.)	max (sec.)
SMR 1s	N	H				5	4	6	0	0.015	0.05
						10	8	12	0.1	0.095	0.17
						20	16	24	0.2	0.175	0.29
						30	24	36	0.3	0.255	0.41

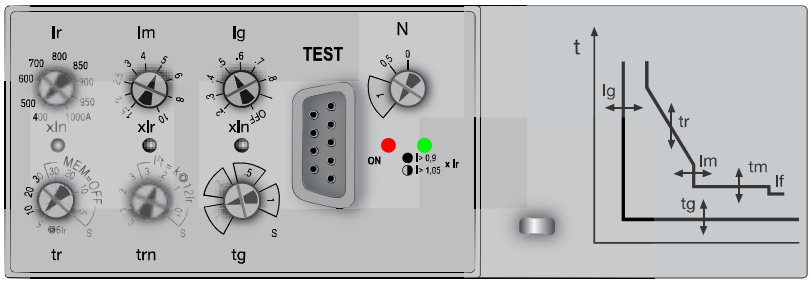
					In	LT pick-up band 1.05÷1.3 Ir			ST pick-up band ± 20% Im			Neutral protection Switchable type		
					(A)	Ir setting	min (A)	max (A)	Im setting	min (A)	max (A)	4P4T	4P 3TN	4P3T
SMR 1g	N	H		FK800	800	0.4-1 x In in 9 steps ❶	320	800	1.5-10 Ir in 9 steps ❸	480	8000	=Ir	=Ir/2	not protected
				FK1250	1000		400	1000		600	100000	=Ir	=Ir/2	
					1250		500	1250		750	12500	=Ir	=Ir/2	
				FK1600	1600		640	1600		960	16000	=Ir	=Ir/2	

						LTD(1)			STD(2)		
						Setting	min (sec.)	max (sec.)	Setting	min (sec.)	max (sec.)
SMR 1g	N	H				5	4	6	0	0.015	0.05
						10	8	12	0.1	0.095	0.17
						20 ❷	16	24	0.2 ❹	0.175	0.29
						30	24	36	0.3	0.255	0.41

						GF pick-up band ± 20% Ig			GFD(2)		
						Ig setting	min.(A)	max.(A)	Setting	min (sec.)	max (sec.)
SMR 1g	N	H		FK800	800	0.2-1 x In in 9 steps ❶	160	800	0	0.015	0.05
				FK1250	1000		200	1000	0.1 ❻	0.095	0.17
					1250		250	1250	0.2	0.175	0.29
				FK1600	1600		320	1600	0.3	0.255	0.41

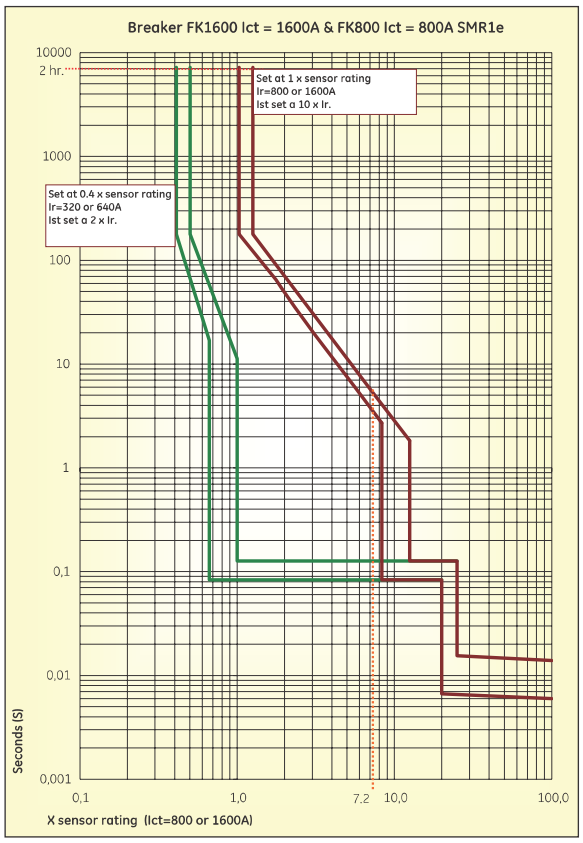
(1) At 7.2 x Ir: Min. is minimum settable delay: Max: Is maximum total tripping time.
(2) At set value: Min. is minimum settable delay: Max: Is maximum total tripping time.

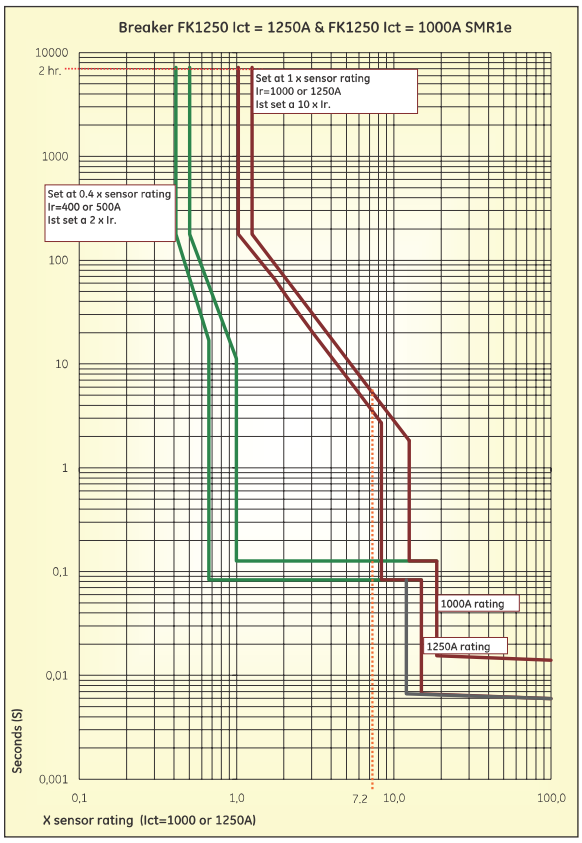
Trip units are available in 4 ratings and 3 different versions depending on the frame rating and the chosen functionality.
FK800 frame size
800A, SMR 1e, s or g
FK1250 frame size
1000 and 1250A,SMR 1e, s or g
FK1600 frame size
1600A,SMR 1e, s or g
The trip units are an integral part of the breaker and are NON interchangeable.

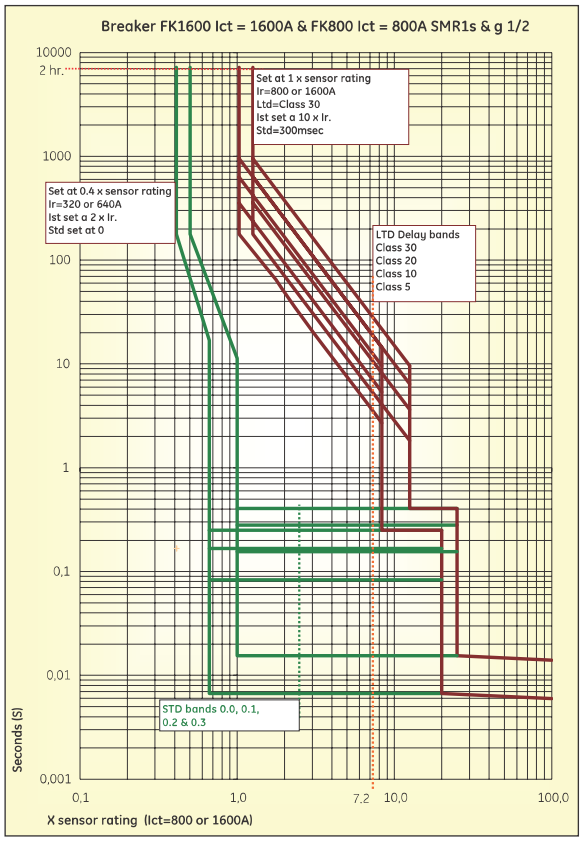


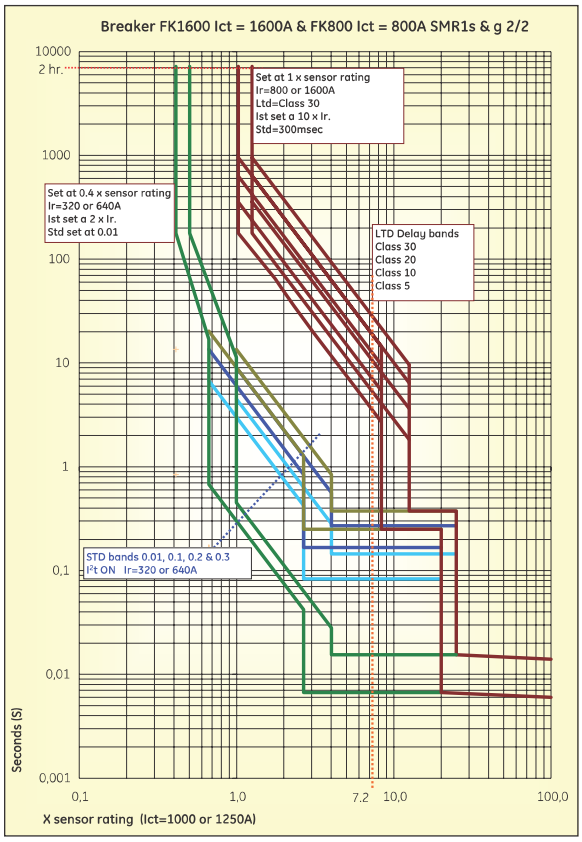
Time Current Curves

FK800 - FK1600
Trip Units SMR1e, s & g

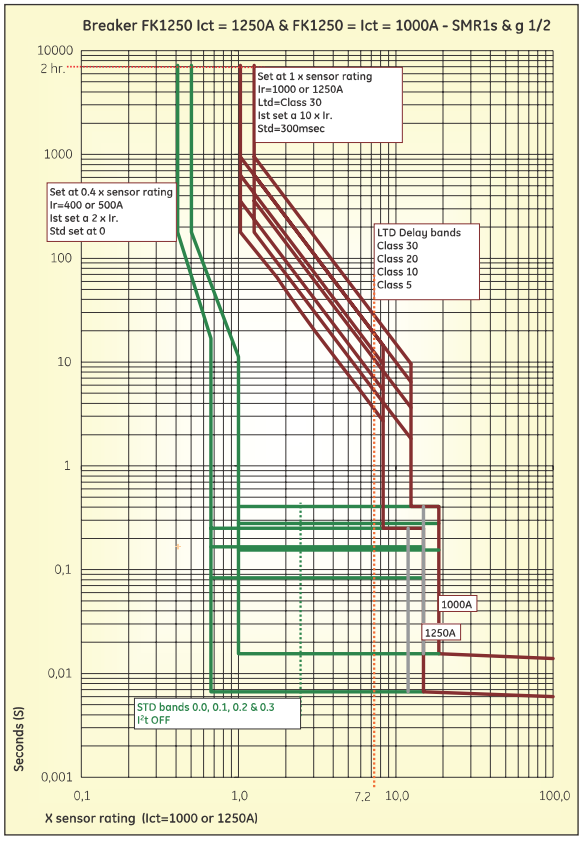


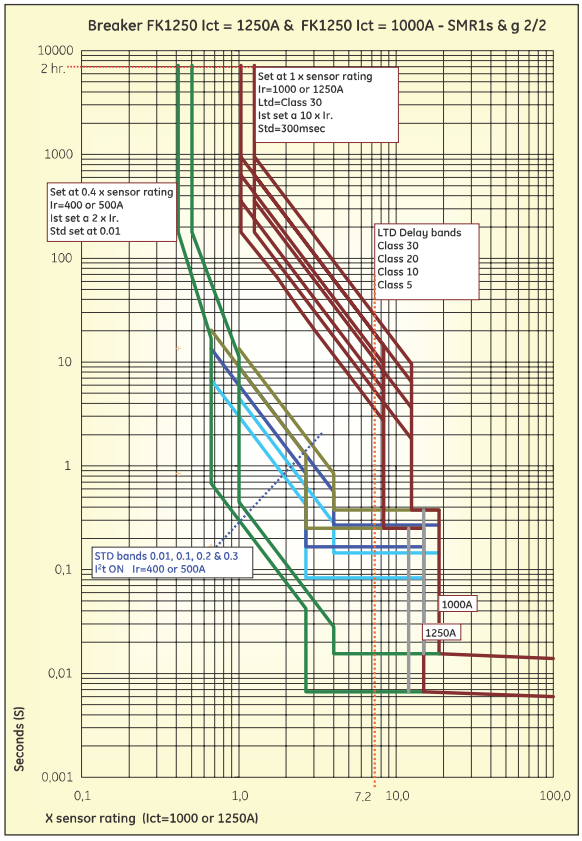


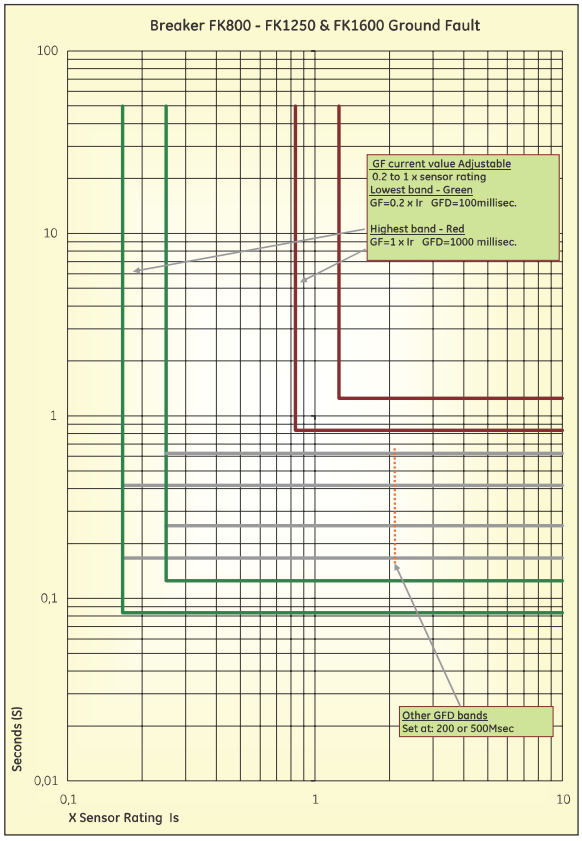


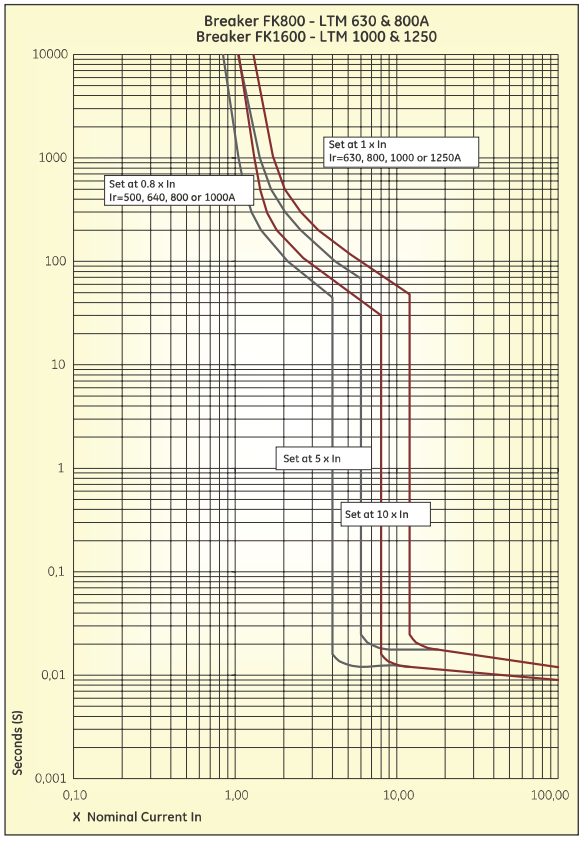


Time Current Curves









Electronic Trip Units

Accessories for SMR1 and SMR2 types

Long time module SMR1 (FAMLT)(1)

This external DIN-rail mounted device with modular dimensions is directly connected to the SMR1electronic trip unit.
The device is equipped with a NC 1A/400V AC contact that opens to a signal which indicates that a LT trip will shortly be initiated by the SMR1.
The SMR1 emits this before a trip action is initiated. When set to motor protection this occurs 0.5 seconds before the tripping event and at 0.05 seconds when set to line protection. Contact is reset when breaker trips.

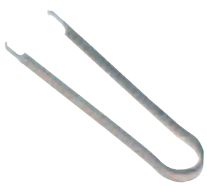
Test kit for SMR1 & SMR2 devices (FAZ)

Designed to test the actuator trip unit combinations the device is plugged into the test jack on the trip unit front face. Just remove the test jack cover, insert and plug in the test device.
Releasing the push button on the tester FAZ front should now initiate a trip event. The tester requires a 9V battery type 6F22 and is also equipped with a battery status indicator.

Testing the SMR1e, s & g Trip Unit & FK Frame Breakers
A PC based package is available designed to test these combinations. The use of specific GE software and a PC connected to the Trip Unit test jack allows the user to simulate a fault event that should trip the breaker.

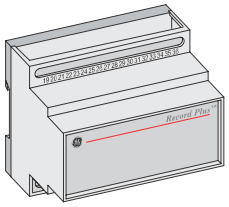
Please contact your local GE sales office for availability.

Rating plug tool SMR1 & SMR 2 (FAR)



A rating plug can be removed by using two small screwdrivers.
In case of repeated removal the ***Record Plus™*** rating plug removal tool is advised to enhance the ease and safety of this operation.

Communication & contact module SMR2 (FAMECM)



This external DIN-rail mounted device with modular dimensions is directly connected to the SMR2 electronic trip unit.
It is a multi functional unit acting as an interface between the breaker and the communication network.
To use the communication option the FAMECM module requires an auxiliary supply of 24V DC.

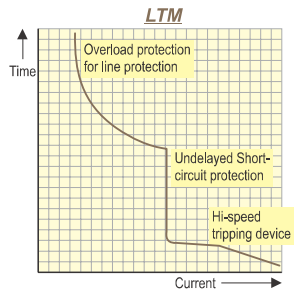
The device is also equipped with four NC 1A/400V AC contacts that can provide the following outputs:
- Breaker trip reason
  (Overload (LT) **OR** Short Circuit (ST/I)
- Load shedding device contacts.
  Channel 1 **AND** Channel 2

(1) Use of an RC suppressor is recommended.
(See Controls and Automation catalogue)

Trip units

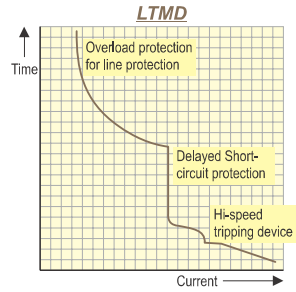
Overview of available types

LTM - Line thermal magnetic



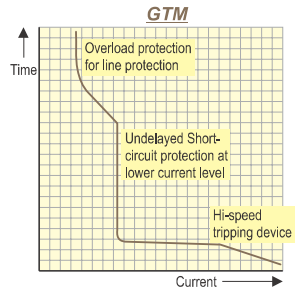
This trip unit offers overload and short-circuit protection.
The overload protection is adjustable from 0.8 to 1 x the chosen rating whilst the short-circuit protection is set at 10 x the chosen rating (FD frame) or adjustable from 5 to 10 x the chosen rating (FE and FK frame).
The unit is designed to protect the lines and/of loads present in standard circuits.

LTMD - Line thermal magnetic, selective type



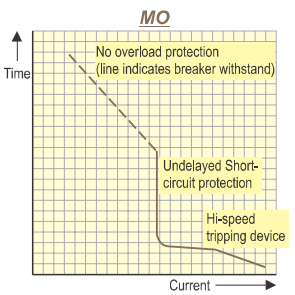
This trip unit offers overload and short-circuit protection.
The overload protection is adjustable from 0.8 to 1 x the chosen rating whilst the short-circuit protection is set at 10 x the chosen rating (FD frame) or adjustable from 5 to 10 x the chosen rating (FE frame).
The unit is designed to offer discrimination with downstream protection devices. It also protects the lines and/of loads present in standard circuits.

GTM - Line thermal magnetic



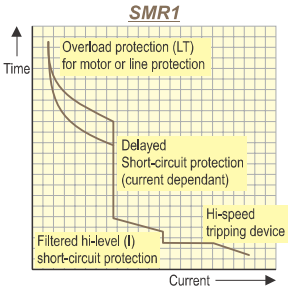
A trip unit de signed to offer overload and short-circuit protection.
The overload protection is adjustable from 0.8 to 1 x the chosen rating whilst the short-circuit protection is set at about 4 x the chosen rating (FD frame) or adjustable from 2.5 to 5 x the chosen rating (FE frame).
Due to its low short-circuit current setting the unit can be used to protect long cable runs or to provide generator protection.

MO - Magnetic Only



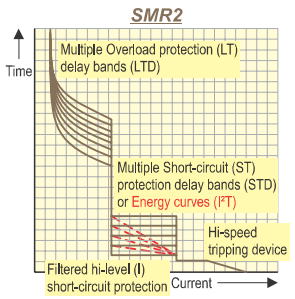
This trip unit offers short-circuit protection only, the device is adjustable from 10 to 15 x the chosen rating. In order to prevent the protection device (Circuit Breaker) from overheating, the current of the circuit that it protects, needs to be limited. (see dotted line)
The unit is primarily designed to be used with thermal relays in motor protection circuits.

SMR1 (e)- Selective Electronic Protection[2]



A trip unit designed to offer a overload (LT) and short-circuit protection (ST). The overload protection is adjustable from 0.4 to 1 x the chosen rating and has two protection bands (LTD), one for line protection and one for motor protection (class 10)[1]. To ensure full discrimination the short-circuit protection has a current dependant fixed time setting that varies per frame size.
The device is adjustable from 2 to 13* x the set LT current value.
The unit is designed to protect all circuit types and to offer a high level of discrimination with downstream devices.

SMR2 (1s & 1g) - Enhanced Electronic Protection[2]



A trip unit designed to offer a overload (LT) and short-circuit protection (ST). The overload protection is adjustable from 0.4 to 1 x the chosen rating and has multiple protection bands (LTD). The short-circuit protection (ST) is adjustable from 2 to 13 x the set LT value and has multiple protection bands (STD). The short-circuit protection can also be set to an energy mode. The unit is designed to protect all circuit types and to offer a high level of discrimination with downstream devices. Different modules allow the user to expand the device including groundfault, load shedding and communications etc.

(1) Not available on FK frame execution.
(2) Text applicable for SMR1/2. For SMR1e, SMR1s and g see relevant section.