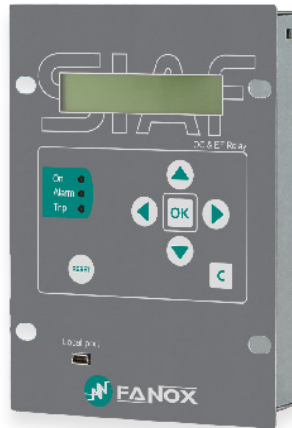


SIA-F

SF6 & Metalclad Switchgear Protection Relay



Total state control of RMUs and SF6 insulated switchgears

Overcurrent and Earth Fault Protection Relay

Secondary Distribution Protection and SF6 insulated Switchgears

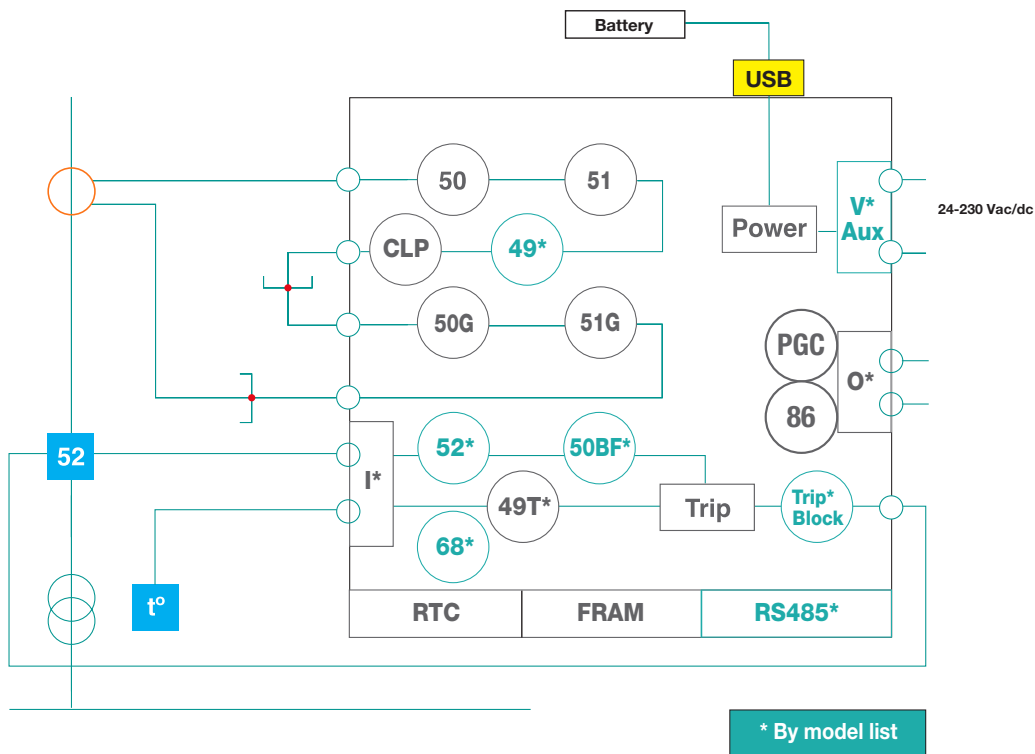
- The SIA-F is an overcurrent protection relay with a switched auxiliary power supply 24-230 Vac/dc. The current is measured by using /5 or /1 current transformers. The equipment can be occasionally supplied by an external battery portable kit (KITCOM).
- Trip block for switch disconnecter, 49, 49T, 52, 50BF, 68 as optionals.
- High electromagnetic compatibility.
- With circuit breaker control and monitoring (circuit breaker status, number of openings, accumulated amperes, etc.).
- Compact size with reduced depth makes it easier to install and saves costs.
- USB connection on the front (Modbus RTU communication protocol).
- A specific test menu is provided.
- Possibility of external battery power supply (KITCOM).
- There are three configurable LED indicators on the front of the SIA-F equipment. By default, they indicate if the equipment is On (LED ON), if an alarm has happened (LED ALARM) or if a trip has happened (LED TRIP).
- Programmable logic (PLC)
- 1 Oscillographic record, non-volatile RAM memory in order to store up to 200 events and 4 fault reports, without power supply thanks to its internal RTC (Real Time Clock)

ANSI CODE PROTECTIONS

50	Instantaneous phase overcurrent
51	Inverse time phase overcurrent
50G	Instantaneous measured neutral overcurrent
51G	Inverse time measured neutral overcurrent
49	Thermal overload
52	Breaker Wear Monitoring
50BF	Circuit breaker failure
86	Trip lockout
TB	Trip block for switch disconnecter
PGC	Programmable logic control

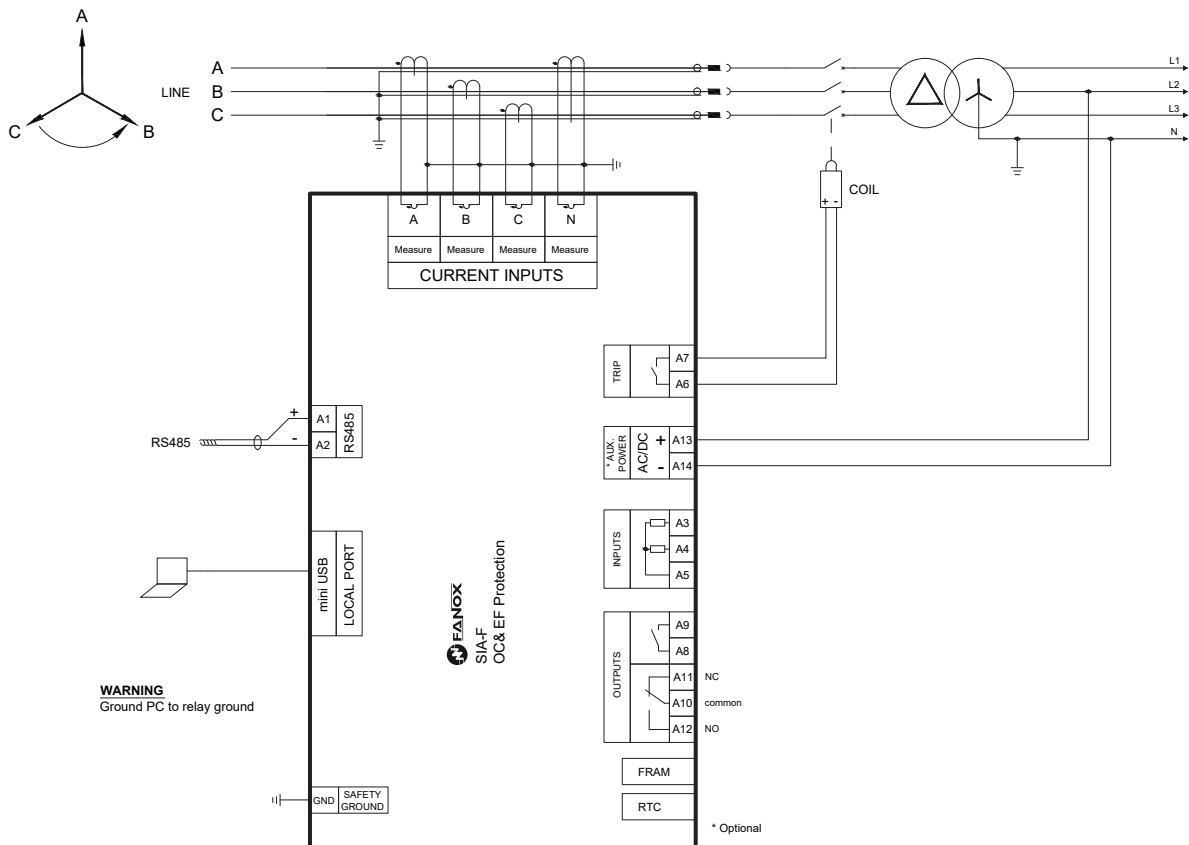


Functions diagram SIA-F



Connections diagram SIA-F

- 3 CT measurement ,1 CT sensitive neutral



Technical parameters SIA-F

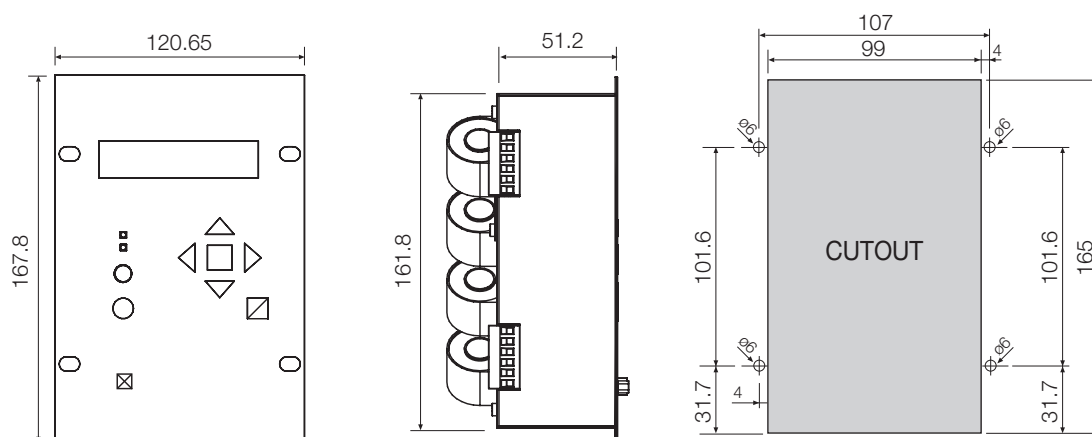
Function 50	Function Enable: Yes/No
	Current Tap: 0.10 to 30.00 xIn (step 0.01 xIn)
	Time Delay: 0.02 to 300.00 s (step 0.01 s)
	Activation level 100%
	Deactivation level 90%
	Instantaneous deactivation
	Timing accuracy: ± 30 ms or $\pm 0.5\%$ (greater of both)
Function 50G	Function Enable: Yes/No
	Current Tap: 0.10 to 30.00 xIn (step 0.01 xIn)
	Time Delay: 0.02 to 300.00 s (step 0.01 s)
	Activation level 100%
	Deactivation level 90%
	Instantaneous deactivation
	Timing accuracy: ± 30 ms or $\pm 0.5\%$ (greater of both)
Function 51	Function Enable: Yes/No
	Curve Type: IEC 60255-151 and IEEE curves.
	IEC (Definite time, standard inverse, very inverse, extremely inverse, long time inverse, short time inverse and IEEE (Moderately inverse, very inverse, extremely inverse.
	Time delay: 0.02 to 300.00 s (step 0.01 s)
	Time Dial (TMS): 0.02 to 1.25 (step 0.01)
	Current Tap: 0.10 to 7.00 xIn (step 0.01 xIn)
	Curve, current activation level: 110%
	Curve, current deactivation level: 100%
	Defined time, current activation level: 100%
	Defined time, current deactivation level: 90%
	Instantaneous deactivation
	Timing accuracy: ± 30 ms or $\pm 5\%$ (greater of both)
Function 51G	Function Enable: Yes/No
	Curve Type: IEC 60255-151 and IEEE curves.
	IEC (Definite time, standard inverse, very inverse, extremely inverse, long time inverse, short time inverse and IEEE (Moderately inverse, very inverse, extremely inverse.
	Time delay: 0.02 to 300.00 s (step 0.01 s)
	Time Dial (TMS): 0.02 to 1.25 (step 0.01)
	Current Tap: 0.10 to 7.00 xIn (step 0.01 xIn)
	Curve, current activation level: 110%
	Curve, current deactivation level: 100%
	Defined time, current activation level: 100%
	Defined time, current deactivation level: 90%
	Instantaneous deactivation
	Timing accuracy: ± 30 ms or $\pm 5\%$ (greater of both)
Function CLP	Permission: Yes/No
	Setting groups: 1 to 3 (step 1)
	No load time: 0.02 to 300.00 s (step 0.01 s)
	Cold load time: 0.02 to 300.00 s (step 0.01 s)

Function TB (*)	Function Enable: Yes/No
	Tap: 1.50 to 20.00 xIn (step 0.01 xIn)
Function 52 (*)	Maximum number of openings: 1 to 10,000 (step 1)
	Maximum accumulated amperes: 0 to 100,000 (M(A ²)) (step 1)
	Opening time: 0.02 to 30.00 s (step 0.01 s)
	Closing time: 0.02 to 30.00 s (step 0.01 s)
	Excessive repeated openings: 1 to 10,000 (step 1)
	Repetitive openings/Time: 1 to 300 min (step 1 min)
Function 50BF (*)	Permission: Yes/No
	Opening failure time: 0.02 to 1.00 s (step 0.01 s)
	Open breaker activation threshold: 8% In
	Open breaker reset threshold: 10% In
	Function start: Device trip, opening failure input activation, breaker opening command activation
Function 49 (*)	Function enable: No/Yes
	Current tap: 0.10 to 2.40 In (step 0.01 xIn)
	ζ heating: 3 to 600 min (step 1 min)
	ζ cooling: 1 to 6 x ζ heating (step 1)
	Alarm: 20 to 99% (step 1%)
	Trip level: 100%
	Deactivation level: 95% of alarm level
	Timing accuracy: $\pm 5\%$ respect of theoretical value.
Function 68 (*)	Available through configurable inputs thanks to programmable logic
Function 49T (*)	Available through configurable inputs
Function 86	Allows to latch (lock out) the contact trip due to programmable logic (PLC: LATCH)
Programmable logic control (PGC)	OR4, OR4_LATCH, OR4_PULSES, OR4_TIMERUP, OR4_PULSE, NOR4, NOR4_LATCH, NOR4_TIMERUP, NOR4_PULSE, AND4, AND4_PULSES, AND4_TIMERUP, AND4_PULSE, NAND4, NAND4_TIMERUP, NAND4_PULSE, NOR4_PULSES
Settings tables	3 settings groups
	Selectable by input or general setting.
SER	100 events
Disturbance fault recording (DFR)	16 samples/cycle
	4 fault reports, 16 events in each.
	1 disturbance record in COMTRADE format (22 cycles each).
	COMTRADE IEEE C37.111-1991 - 4 analog channels and 32 digital channels
Outputs (*)	2 configurable outputs:
	250 Vac – 8 A 30 Vdc – 5 A
Inputs (*)	2 Configurable inputs The voltage of the inputs is the same as the auxiliary power supply

Technical parameters SIA-F

Current measurements	True RMS
	Sampling: 16 samples/cycle
	±2% in a band of ± 20% the nominal current and ±4% or ± 5 mA in the rest of the band.
Communications	Local port (mini USB): Modbus RTU
	RS485 rear port: Modbus RTU or DNP 3.0 Serial (*)
Power supply (*)	24-230 Vac/Vdc +10/-20%
Battery Supply	Directly through the front USB port with a USB cable connected to the PC, with USB KITCOM adapter or standard powerbank
Transformers	Measurement 3 or 4 CT /5 or /1
Environmental conditions	Operating temperature: -10 to +70°C
	Storage temperature: -20 to +80 °C
	Relative humidity: 95%
Mechanical characteristics	Metallic box
	Panel mounted
	Height x Width: 167.8 x 120.65 (mm)
	Depth: 74.6 mm
	Weight: 1.05 kg.
	IP-54 panel mounted
(*) Optional depending on model	

Dimensions and cutout SIA-F



Selection & Ordering data SIA-F

SIA-F										Overcurrent & Earth Fault Protection Relay									
1 5										PHASE CURRENT MEASUREMENT In= 1 A (0.10-30.0 A) In= 5 A (0.50-150.0 A)									
1 5 B										NEUTRAL CURRENT MEASUREMENT In= 1 A (0.10-30.0 A) In= 5 A (0.50-150.0 A) In= 0.2 A (0.02-6.0 A)									
0										NET FREQUENCY Defined by General Settings									
C										POWER SUPPLY 24-230 Vdc/ac									
0 1 B C										ADDITIONAL FUNCTIONS - + 49 + 52 + 50BF + Trip block for switch disconnecter + Trip block for switch disconnecter + 49 + 52 + 50BF									
0 1 2										COMMUNICATIONS USB (Modbus RTU) USB (Modbus RTU) + RS485 (Modbus RTU) USB (Modbus RTU) + RS485 (DNP3.0 Serial)									
0 1										INPUTS AND OUTPUTS Trip Trip + 2 Inputs + 2 outputs									
0										MECHANICAL ASSEMBLY Vertical Assembly									
A B C D										LANGUAGE English, Spanish and German English, Spanish and Turkish English, Spanish and French English, Spanish and Russian									
A										ADAPTATION 50 + 51 + 50G + 51G + 86 + CLP + PGC									

Example of ordering code:

SIA-F	1	1	0	C	0	1	1	0	C	A	<i>SIAF110C0110CA</i>									
--------------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	-----------------------	--	--	--	--	--	--	--	--	--