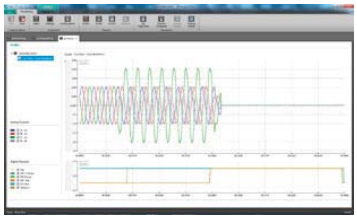
SIA-F

Overcurrent and Earth Fault Protection Relay for Secondary Distribution

Main specifications

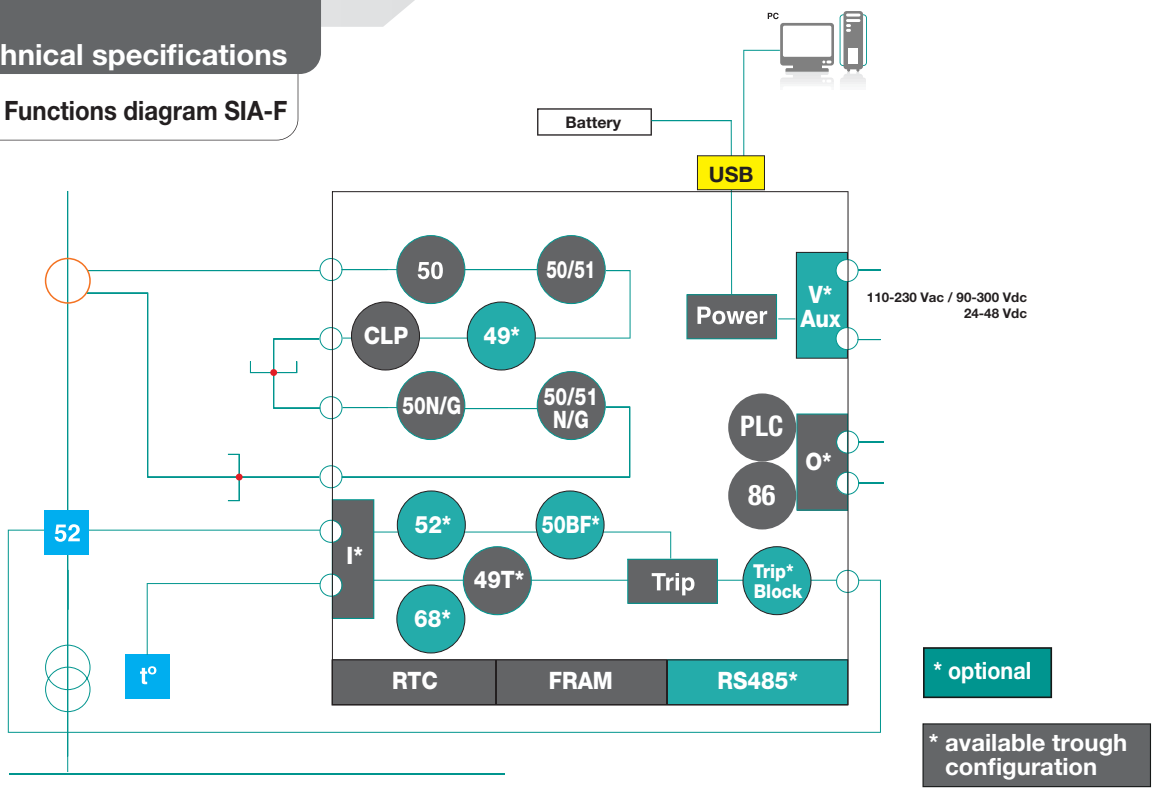
- The SIA-F is an overcurrent protection relay with a switched auxiliary power supply (24-220 Vdc / 48-230 Vac). The current is measured by using /5 or /1 current transformers. The equipment can be occasionally supplied by an external battery portable kit (KITCOM).
- Protection functions: 50, 50/51, 50N/G, 50/51 N/G, CLP, 86, PLC.
- Trip block for switch disconnector, 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 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)



Additional information to fault reports

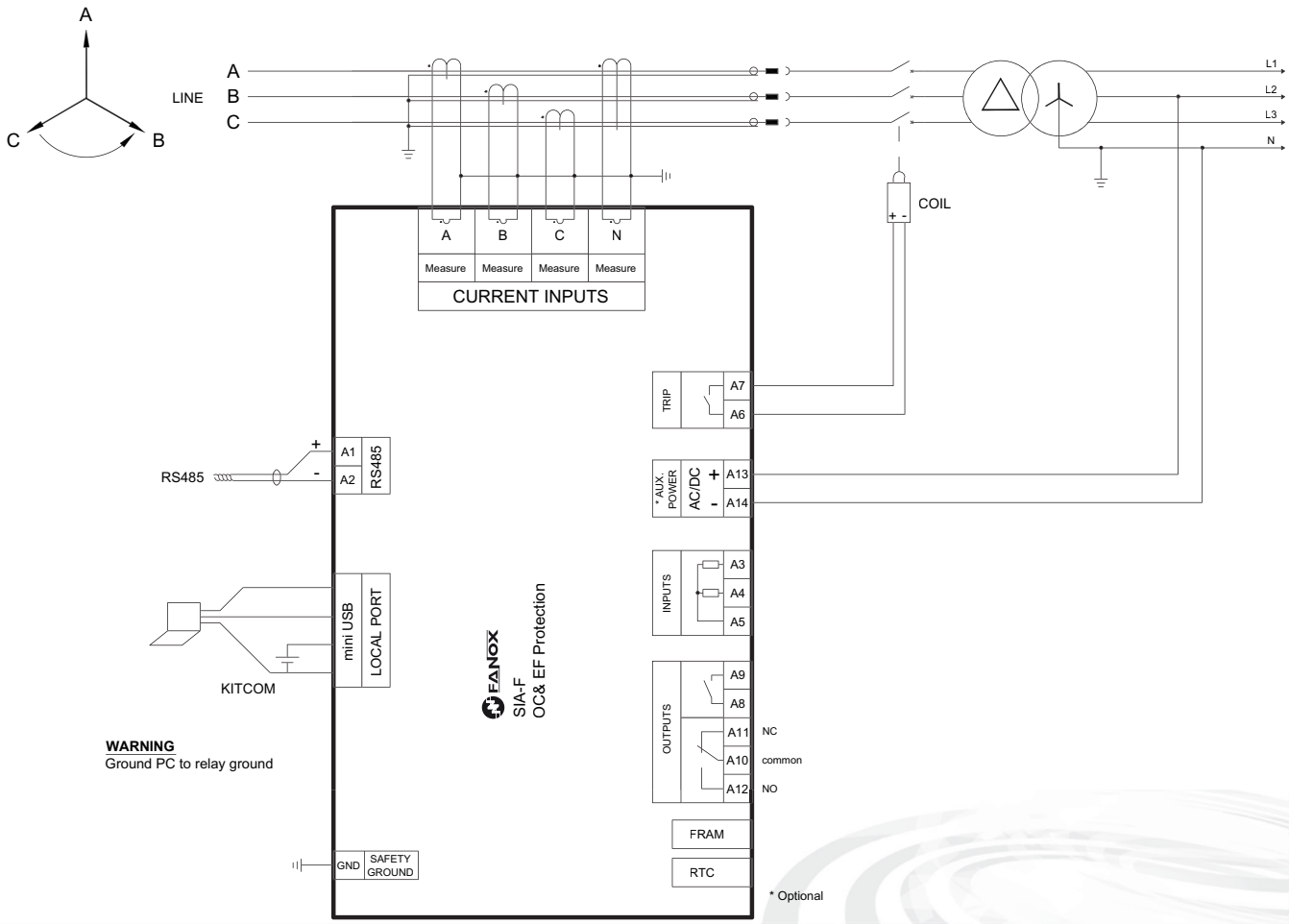
Technical specifications

Functions diagram SIA-F



Connections diagram SIA-F

- 3 CT measurement
  1 CT sensitive neutral



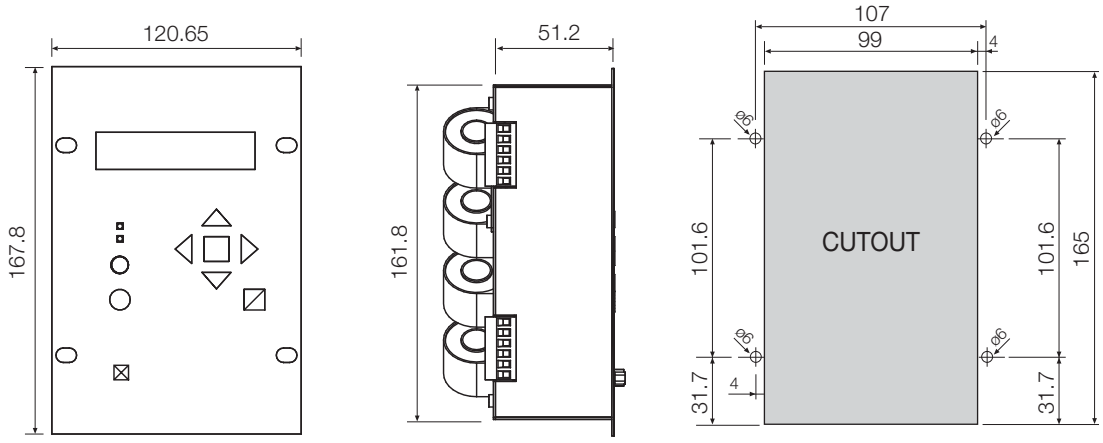
Technical parameters SIA-F

Function 50	Permission: Yes/No
	Operating range: 0.10 to 30 x In (step 0.01)
	Operating time: 0.02 to 300 s (step 0.01s)
Function 50/51N/G	Permission: Yes/No
	Activation level 100%
	Deactivation level 95%
	Instantaneous deactivation
	Timing accuracy: ±30 ms or ±0,5% (greater of both)
Function 50N/G	Permission: Yes/No
	Operating range: 0.10 to 30 x In (step 0.01)
	Operating time: 0.02 to 300 s (step 0.01s)
	Activation level 100%
	Deactivation level 95%
	Instantaneous deactivation
	Timing accuracy: ±30 ms or ±0,5% (greater of both)
Function 50/51	Permission: Yes/No
	Operating range: 0.10 to 7 x In (step 0.01)
	Curves: IEC 60255-151 and ANSI-IEEE
	Operating time: IEC inverse curve, IEC very inverse curve, IEC extremely inverse curve, : ANSI inverse curve, ANSI very inverse curve, ANSI extremely inverse curve.
	Defined time: 0.02 to 300 s (step 0.01 s)
	Dial: 0.02 to 1.25 (step 0.01)
	Curve, activation level 110%
	Curve, deactivation level 100%
	Defined time, activation level 100%
	Defined time, deactivation level 95%
	Instantaneous deactivation
	Operating range: 0.10 to 7 x In (step 0.01)
	Curves: IEC 60255-151 and ANSI-IEEE
	Operating time: Operating time: IEC inverse curve, IEC very inverse curve, IEC extremely inverse curve: ANSI inverse curve, ANSI very inverse curve, ANSI extremely inverse curve.
	Defined time: 0.02 to 300 s (step 0.01 s)
	Dial: 0.02 to 1.25 (step 0.01)
	Curve, activation level 110%
	Curve, deactivation level 100%
	Defined time, activation level 100%
	Defined time, deactivation level 95%
	Instantaneous deactivation
	Timing accuracy: ±30 ms or ±5% (greater of both)
CLP	Permission: Yes/No
	Setting table: 1 to 3 (step 1)
	No load time:0.02 to 300 s (step 0.02 s)
	Cold load time: 0.02 to 300 s (step 0.01 s)
Trip block protection for the switchgear (*)	Blocking: Yes/no
	Blocking limit: 1.5 to 20 x In (step 0.01)
Circuit breaker monitoring 52 (*)	Excessive number of openings: 1 to 10000 (step 1)
	Maximum accumulated amps: 0 to 100000 ($M(A^2)$) (step 1)
	Opening time: 0.02 to 30 s (step 0.01 s)
	Closing time: 0.02 to 30 s (step 0.01 s)
	Excessive repeated openings: 1 to 10000 (step 1)
	Time Excessive repeated openings: 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(*)	permission : yes/no
	Tap: 0.10 a 2.40 Inominal (step 0.01)
	ζ heating: 3 a 600 minutes (step 1)
	ζ cooling: 1 a 6 xζ heating (step 1)
	Alarm level: 20 a 99% (step 1)
	Trip level: 100%
	Trip reset: 95% of alarm level
	Timing accuracy: ± 5% or ± 2s (greater of both)
Function 68 (*)	Available through configurable inputs thanks to programmable logic
Programmable Logic Control (PLC)	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
Function 86	Allows to latch (lock out) the contact trip due to programmable logic (PLC).
Function 49T (*)	Available through configurable inputs
Settings tables	3 settings tables
	Activated by general settings or by inputs
RTC	Capacitor charge time: 10 minutes
	Operation without auxiliary voltage: 72 hours
Trip output (configurable)	Potential free contact
Configurable outputs (*)	2 configurable outputs: 250 Vac – 8 A 30 Vdc – 5 A
Configurable inputs (*)	The same voltage as auxiliary power supply 2 configurable inputs
Current measure	True RMS
	Sampling: 16 samples/cycle
	Accuracy of ±2% in a band of ±20% over the rated current and ±4% for the rest of measurement range
	Saturation limit: 30 times rated current
Fault report	4 fault reports with 16 events each
Oscillography	16 samples/cycle
	Oscillo starting configuration
	1 records: 3 cycles pre-fault and 19 post-fault
	COMTRADE IEEE C37.111-199
	4 analogue channels and 32 digital channels
Communications	USB port (connector mini USB type A): Modbus RTU
	RS485 port: Modbus RTU or DNP3.0 Serial (*)
Auxiliary power supply(*)	24-220 Vdc / 48-230 Vac ±20%
Battery supply	With KITCOM adapter to USB (connector USB type B) or directly through the front USB port with a USB cable connected to the PC.
Environment	Operating temperature: -10 to 70ºC
	Storage temperature: -20 to 80 ºC
	Humidity: 95%
Transformers	3 or 4 CT /5, /1 or /0.2
Mechanical features	Metallic box
	Panel Mounting
	167,80 x 120,65 mm
	Depth: 74.6 mm
	IP-54 on panel

(*) Optional depending on model

Dimensions and cutout SIA-F



Selection & Ordering data SIA-F

SIA-F	Overcurrent & Earth Fault Protection Relay										
											PROTECTION FUNCTIONS 50 + 50/51 + 50N/G + 50/51N/G + 86 + PLC + Load Pick-up Cold
	1 **5**										**PHASE MEASUREMENT** In = 1 A; (0,10 – 30,00 A) In = 5 A; (0,50 – 150,00 A)
		1 **5** **B**									**NEUTRAL MEASUREMENT** In = 1 A; (0,10 – 30,00 A) In = 5 A; (0,50 – 150,00 A) In = 0,2 A; (0,02 – 6,00 A)
			0								**NET FREQUENCY** Defined by General Setting
				C							**POWER SUPPLY** 24–220 Vdc / 48-230 Vac
					0 **1** **B** **C**						**ADDITIONAL FUNCTIONS** - + 49 + 52 + 50BF + Trip block for switch disconnector + Trip block for switch disconnector + 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 - OUTPUTS** Trip Trip + 2 inputs + 2 outputs
								0			**MECHANICS** 4U x 1/4 rack
									A **B** **C** **D**		**LANGUAGE** English, Spanish and German English, Spanish and Turkish English, Spanish and French English, Spanish and Russian
										A	**ADAPTATION** -

Example of ordering code:

SIA F	1	1	0	C	0	1	1	0	C	A	*SIAF 1 1 0 C 0 1 1 0 C A*