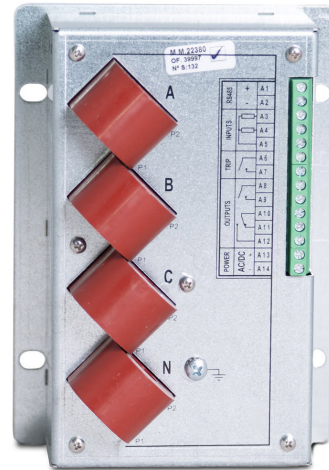
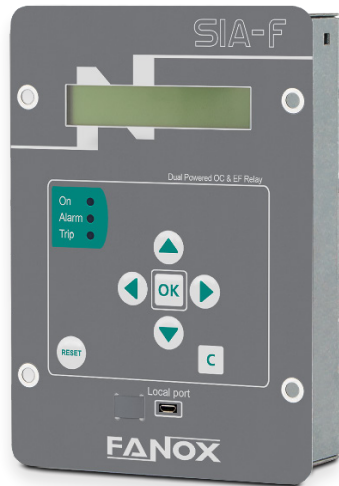


# SIA-F

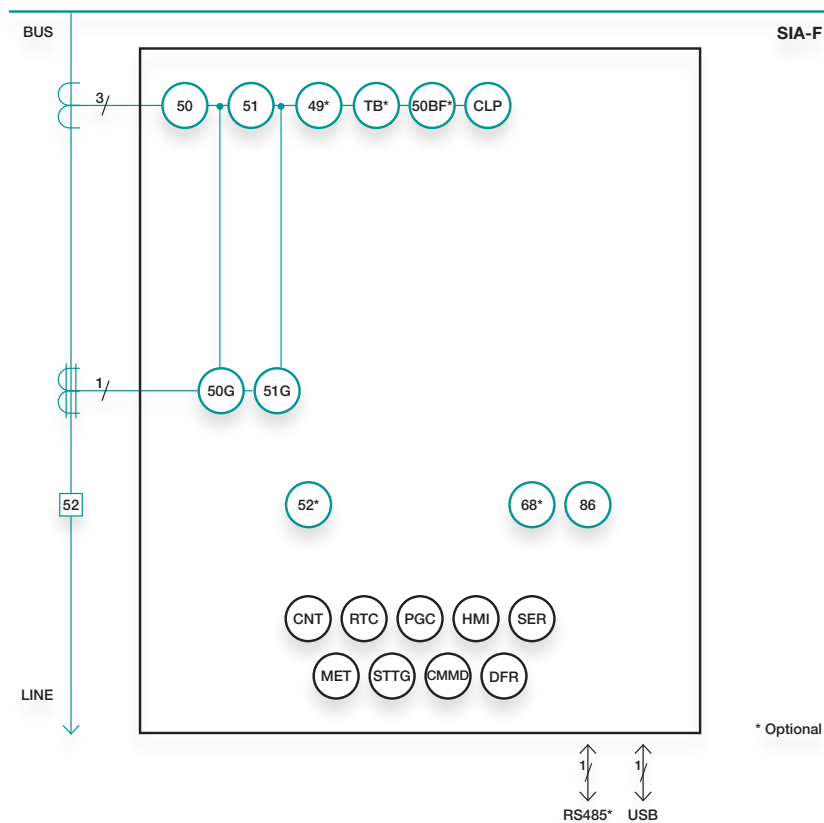
## OC&EF Protection Relay



Secondary Distribution Protection

- The SIA-F is an overcurrent and earth fault protection relay for secondary distribution with an auxiliary power supply of 24-230 Vac/dc.
- 4 current channels for conventional /1 and /5 current transformers.
- Metal housing with high electromagnetic compatibility level (EMC) and a wide range of operating temperature.
- Zone selection interlocking - ZSI (68 function) is available through configurable inputs and outputs thanks to the programmable logic (PGC).
- To allow the communication, relays are provided with a local micro-USB front port and with remote communication with different protocols on the rear side:
  - » Rear Serial Port: Modbus RTU or DNP3.0 Serial (depending on model).
- The SIA-F is provided with up to 2 configurable inputs and up to 3 configurable outputs (depending on model).
- The SIA-F is provided with non-volatile RAM memory in order to store up to 200 events and disturbance fault recording (DFR-4 fault reports and 1 oscillographic record in COMTRADE format), maintaining date & time thanks to its internal RTC (Real Time Clock).
- The oscillography is downloaded by communications port. The SICom communications program allows the oscillography record to be downloaded and saved in COMTRADE format (IEEE C37.111-1991).

## Functions diagram SIA-F



### ANSI CODE PROTECTIONS

<b>50</b>	Instantaneous phase overcurrent
<b>51</b>	Inverse time phase overcurrent
<b>50G</b>	Instantaneous measured neutral overcurrent
<b>51G</b>	Inverse time measured neutral overcurrent
<b>49</b>	Thermal overload
<b>CLP</b>	Cold Load Pickup
<b>52</b>	Breaker wear monitoring
<b>50BF</b>	Circuit Breaker Failure
<b>86</b>	Trip lockout
<b>68</b>	Zone selection interlocking (ZSI)
<b>TB</b>	Trip block for switch disconnecter
<b>PGC</b>	Programmable logic control

### ADDITIONAL FUNCTIONS

<b>CNT</b>	Counters
<b>RTC</b>	Real Time Clock
<b>PGC</b>	Programmable Logic Control
<b>HMI</b>	Human Machine Interface
<b>SER</b>	Sequential Event Recording
<b>DFR</b>	Disturbance Fault Recording
<b>MET</b>	Metering
<b>STTG</b>	Settings Groups
<b>CMMD</b>	Commands

## Technical parameters SIA-F

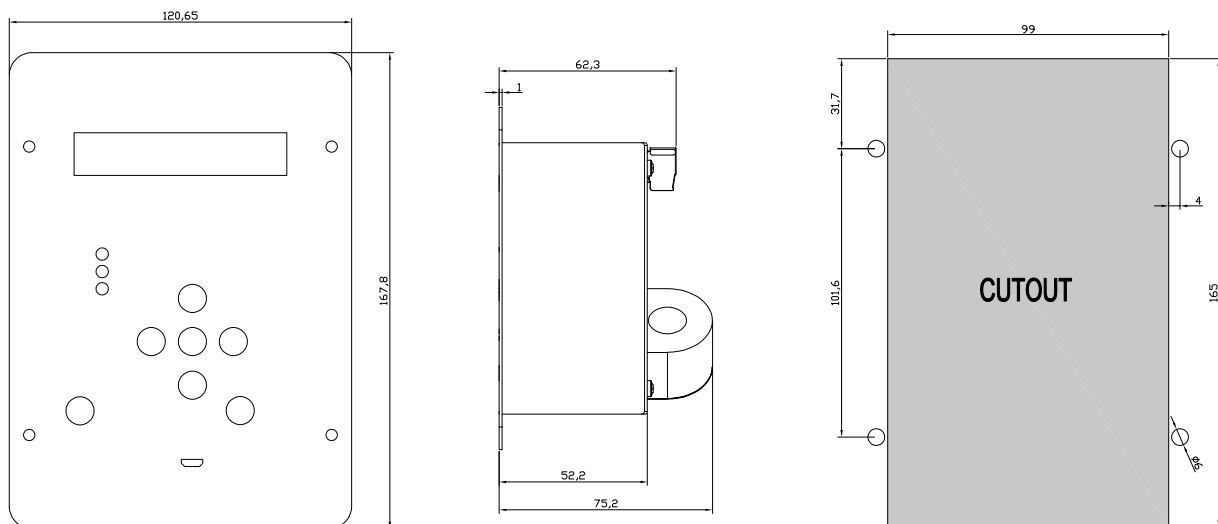
<b>Function 50</b>	Function Enable: Yes/No	<b>Function TB (*)</b>	Function Enable: Yes/No			
	Current Tap: 0.10 to 30.00 xIn (step 0.01 xIn)		Tap: 1.50 to 20.00 xIn (step 0.01 xIn)			
	Time Delay: 0.02 to 300.00 s (step 0.01 s)		<b>Function 52 (*)</b>	Maximum number of openings: 1 to 10,000 (step 1)		
	Activation level 100%			Maximum accumulated amperes: 0 to 100,000 (M(A <sup>2</sup> )) (step 1)		
	Deactivation level 95%			Opening time: 0.02 to 30.00 s (step 0.01 s)		
	Instantaneous deactivation			Closing time: 0.02 to 30.00 s (step 0.01 s)		
	Timing accuracy: ± 30 ms or ± 0.5% (greater of both)			Excessive repeated openings: 1 to 10,000 (step 1)		
<b>Function 50G</b>	Function Enable: Yes/No	<b>Function 50BF (*)</b>	Function Enable: Yes/No			
	Current Tap: 0.10 to 30.00 xIn (step 0.01 xIn)		Time delay: 0.020 to 1.000 s (step 0.001 s)			
	Time Delay: 0.02 to 300.00 s (step 0.01 s)		Open breaker activation threshold: 8% In			
	Activation level 100%		Open breaker reset threshold: 10% In			
	Deactivation level 95%		Function start: Trip, opening failure input activation, open breaker command			
	Instantaneous deactivation	<b>Function 49 (*)</b>	Function enable: No/Yes			
	Timing accuracy: ± 30 ms or ± 0.5% (greater of both)		Current tap: 0.10 to 2.40 In (step 0.01xIn)			
<b>Function 51</b>	Function Enable: Yes/No	<b>Function 68 (*)</b>	Available through configurable inputs thanks to programmable logic			
	Curve Type: IEC 60255-151 and IEEE curves.		<b>Function 49T (*)</b>	Available through configurable inputs		
	IEC (Definite time, standard inverse, very inverse, extremely inverse) and IEEE (Moderately inverse, very inverse, extremely inverse).			<b>Function 86</b>	Allows to latch (lock out) the trip output thanks to the programmable logic (PLC: LATCH)	
	Time delay: 0.02 to 300.00 s (step 0.01 s)				<b>Programmable logic control (PGC)</b>	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
	Time Dial (TMS): 0.02 to 1.25 (step 0.01)					<b>Settings tables</b>
	Current Tap: 0.10 to 7.00 xIn (step 0.01 xIn)	Selectable by input or general setting.				
	Curve, current activation level: 110%	<b>SER</b>	200 events			
	Curve, current deactivation level: 100%		<b>Disturbance fault recording (DFR)</b>	16 samples/cycle		
	Defined time, current activation level: 100%	4 fault reports, 16 events in each.				
	Defined time, current deactivation level: 95%	1 disturbance record in COMTRADE format (22 cycles each).				
	Instantaneous deactivation	COMTRADE IEEE C37.111-1991 - 4 analog channels and 32 digital channels				
	Timing accuracy: ± 30 ms or ± 5% (greater of both)	<b>Outputs (*)</b>	2 configurable outputs:			
	<b>Function 51G</b>		Function Enable: Yes/No	250 Vac – 8 A		
Curve Type: IEC 60255-151 and IEEE curves.		30 Vdc – 8 A				
IEC (Definite time, standard inverse, very inverse, extremely inverse) and IEEE (Moderately inverse, very inverse, extremely inverse).		<b>Inputs (*)</b>	2 Configurable inputs			
Time delay: 0.02 to 300.00 s (step 0.01 s)			The required voltage to activate the inputs is the same as the auxiliary power supply			
Time Dial (TMS): 0.02 to 1.25 (step 0.01)	<b>Function CLP</b>	Function Enable: Yes/No				
Current Tap: 0.10 to 7.00 xIn (step 0.01 xIn)		Setting groups: 1 to 3 (step 1)				
Curve, current activation level: 110%		No load time: 0.02 to 300.00 s (step 0.01 s)				
Curve, current deactivation level: 100%		Cold load time: 0.02 to 300.00 s (step 0.01 s)				
Defined time, current activation level: 100%						
Defined time, current deactivation level: 95%						
Instantaneous deactivation						
Timing accuracy: ± 30 ms or ± 5% (greater of both)						

## Technical parameters SIA-F

<b>Current measurements</b>	True RMS
	All even harmonics are filtered.
	Sampling: 16 samples/cycle
	±2% in a band of ± 20% the nominal current and ±4% or ± 5 mA in the rest of the band.
<b>Communications</b>	Local port (micro USB): Modbus RTU
	RS485 rear port: Modbus RTU or DNP 3.0 Serial (*)
<b>Power supply</b>	24-230 Vac/Vdc +10/-20%
<b>Transformers</b>	Measurement 3 or 4 CT /5 or /1
<b>Environmental conditions</b>	Operating temperature: -10 to +70°C
	Storage temperature: -20 to +80 °C
	Relative humidity: 95%
<b>Mechanical characteristics</b>	Metallic box
	Panel mounted
	Height x Width: 167.8 x 120.65 (mm)
	Depth: 75.2 mm
	Weight: 1.05 kg.
	IP-54 panel mounted

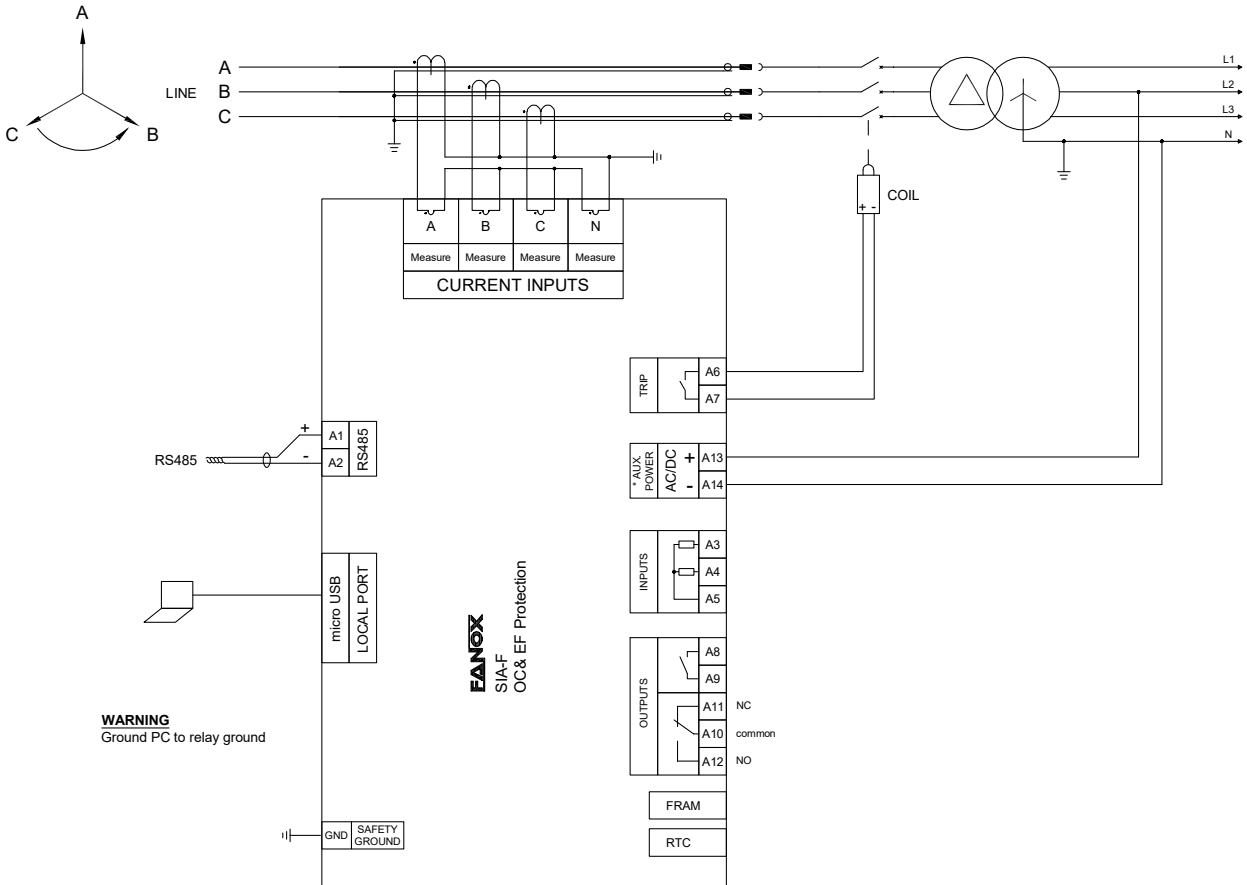
(\*) Optional depending on model

## Dimensions and cutout SIA-F



# Connections diagram SIA-F

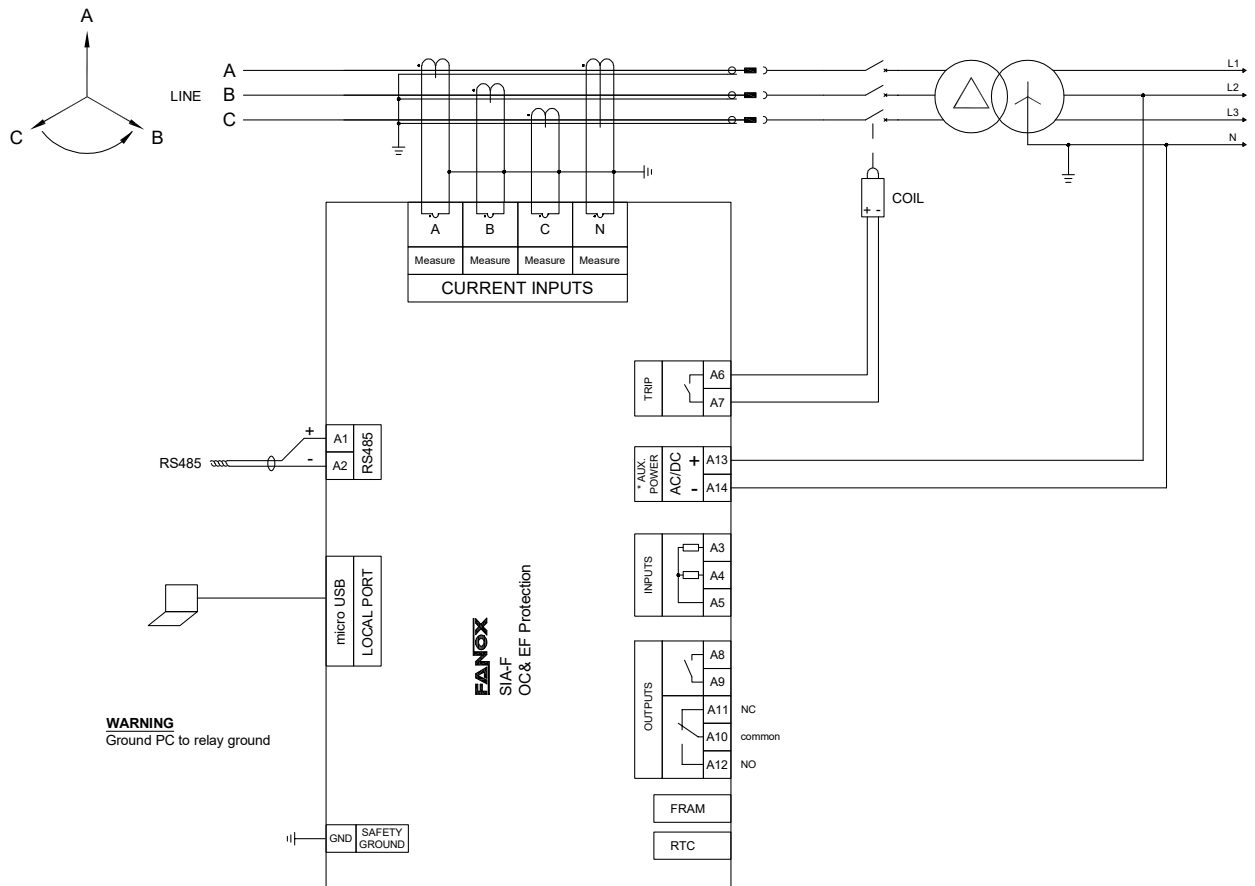
- 3 CT measurement ,1 CT sensitive neutral



(\*) Example of connections diagram

## Connections diagram SIA-F

- 4 CT measurement ,1 CT sensitive neutral



(\*) Example of connections diagram

## Selection & Ordering data SIA-F

### SIA-F

#### Overcurrent & Earth Fault Protection Relay

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

#### Example of ordering code:

1	1	0	C	0	1	1	0	C	A	SIA F 1 1 0 C 0 1 1 0 C A
SIA-F										