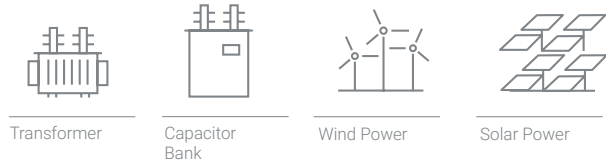


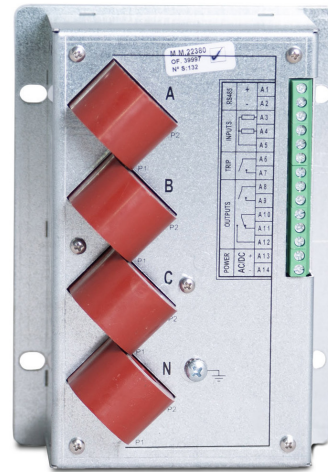
SIA-F

OC&EF
PROTECTION RELAY

Secondary Distribution Protection



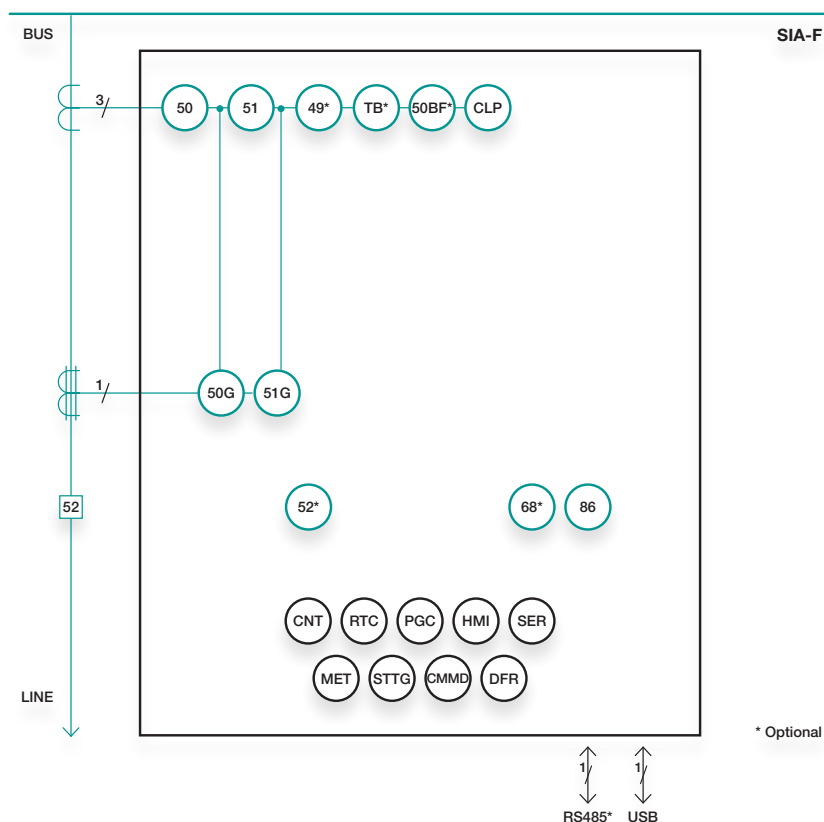
PM I CI Std. CTs /1 /5



- 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

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

ADDITIONAL FUNCTIONS

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

TECHNICAL PARAMETERS SIA-F

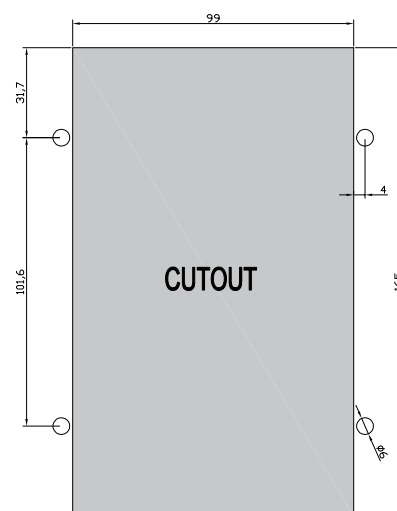
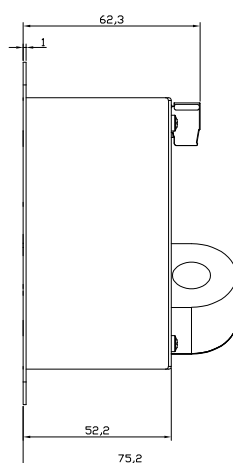
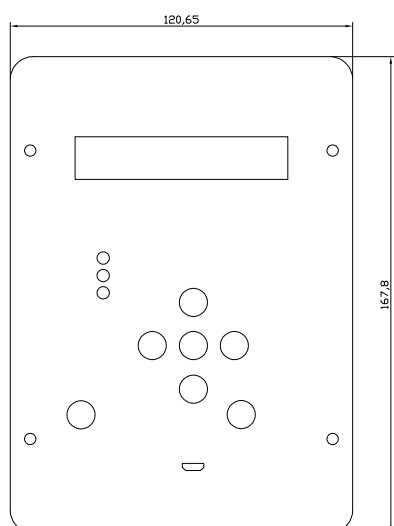
Function 50	Function Enable: Yes/No
	Current Tap: 0.10 to 30.00 xIn (step 0.01 xIn)
	Time Delay: 0.02 to 300.00 s (step 0.01 s)
	Activation level 100%
	Deactivation level 95%
	Instantaneous deactivation
Function 50G	Function Enable: Yes/No
	Current Tap: 0.10 to 30.00 xIn (step 0.01 xIn)
	Time Delay: 0.02 to 300.00 s (step 0.01 s)
	Activation level 100%
	Deactivation level 95%
	Instantaneous deactivation
Function 51	Timing accuracy: ± 30 ms or $\pm 0.5\%$ (greater of both)
	Function Enable: Yes/No
	Curve Type: IEC 60255-151 and IEEE curves.
	IEC (Definite time, standard inverse, very inverse, extremely 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: 95%
	Instantaneous deactivation
Function 51G	Timing accuracy: ± 30 ms or $\pm 5\%$ (greater of both)
	Function Enable: Yes/No
	Curve Type: IEC 60255-151 and IEEE curves.
	IEC (Definite time, standard inverse, very inverse, extremely 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: 95%
	Instantaneous deactivation
Function CLP	Timing accuracy: ± 30 ms or $\pm 5\%$ (greater of both)
	Function Enable: 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)
Function 50BF (*)	Repetitive openings/Time: 1 to 300 min (step 1 min)
	Function Enable: Yes/No
	Time delay: 0.020 to 1.000 s (step 0.001 s)
	Open breaker activation threshold: 8% In
	Open breaker reset threshold: 10% In
Function 49 (*)	Function start: Trip, opening failure input activation, open breaker command
	Function enable: No/Yes
	Current tap: 0.10 to 2.40 In (step 0.01xIn)
	ζ heating: 3 to 600 min (step 1 min)
	ζ cooling: 1 to 6 xζ heating (step 1)
	Alarm: 20 to 99% (step 1%)
	Trip level: 100%
Function 68 (*)	Deactivation level: 95% of alarm level
Function 49T (*)	Timing accuracy: $\pm 5\%$ respect of theoretical value.
Function 86	Available through configurable inputs thanks to programmable logic
Programmable logic control (PGC)	Available through configurable inputs
Settings tables	Allows to latch (lock out) the trip output thanks to the programmable logic (PLC: LATCH)
SER	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
Disturbance fault recording (DFR)	3 settings groups
	Selectable by input or general setting.
	200 events
	16 samples/cycle
Outputs (*)	4 fault reports, 16 events in each.
	1 disturbance record in COMTRADE format (22 cycles each).
Inputs (*)	COMTRADE IEEE C37.111-1991 - 4 analog channels and 32 digital channels
	2 configurable outputs:
	250 Vac – 8 A
	30 Vdc – 8 A
	2 Configurable inputs
	The required voltage to activate the inputs is the same as the auxiliary power supply

TECHNICAL PARAMETERS SIA-F

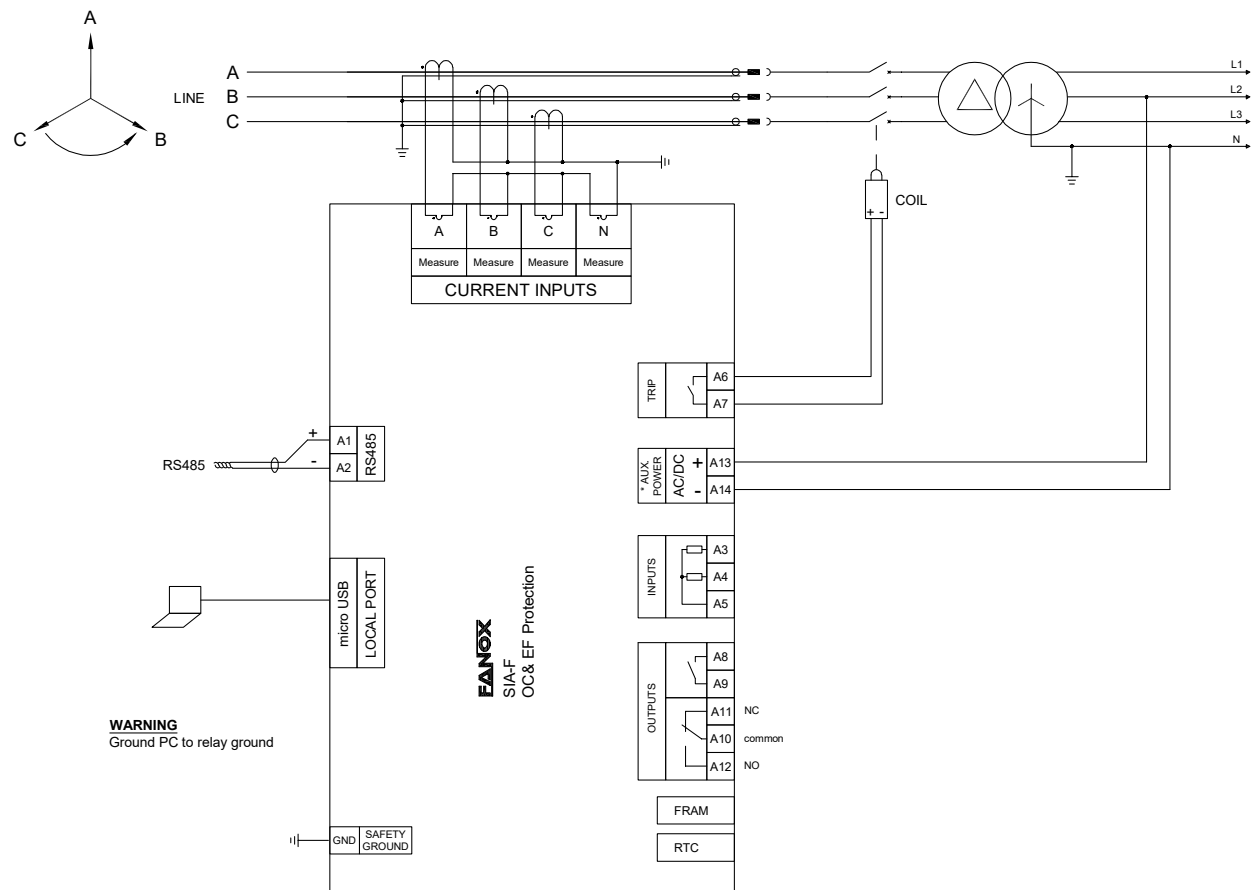
Current measurements	True RMS
	All even harmonics are filtered.
	Sampling: 16 samples/cycle
	±2% in a band of ± 20% the nominal current and ±4% or ± 5 mA in the rest of the band.
Communications	Local port (micro USB): Modbus RTU
	RS485 rear port: Modbus RTU or DNP 3.0 Serial (*)
Power supply	24-230 Vac/Vdc +10/-20%
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: 75.2 mm
	Weight: 1.05 kg.
	IP-54 panel mounted
(*) Optional depending on model	

DIMENSIONS AND CUTOUT SIA-F



CONNECTIONS DIAGRAM SIA-F

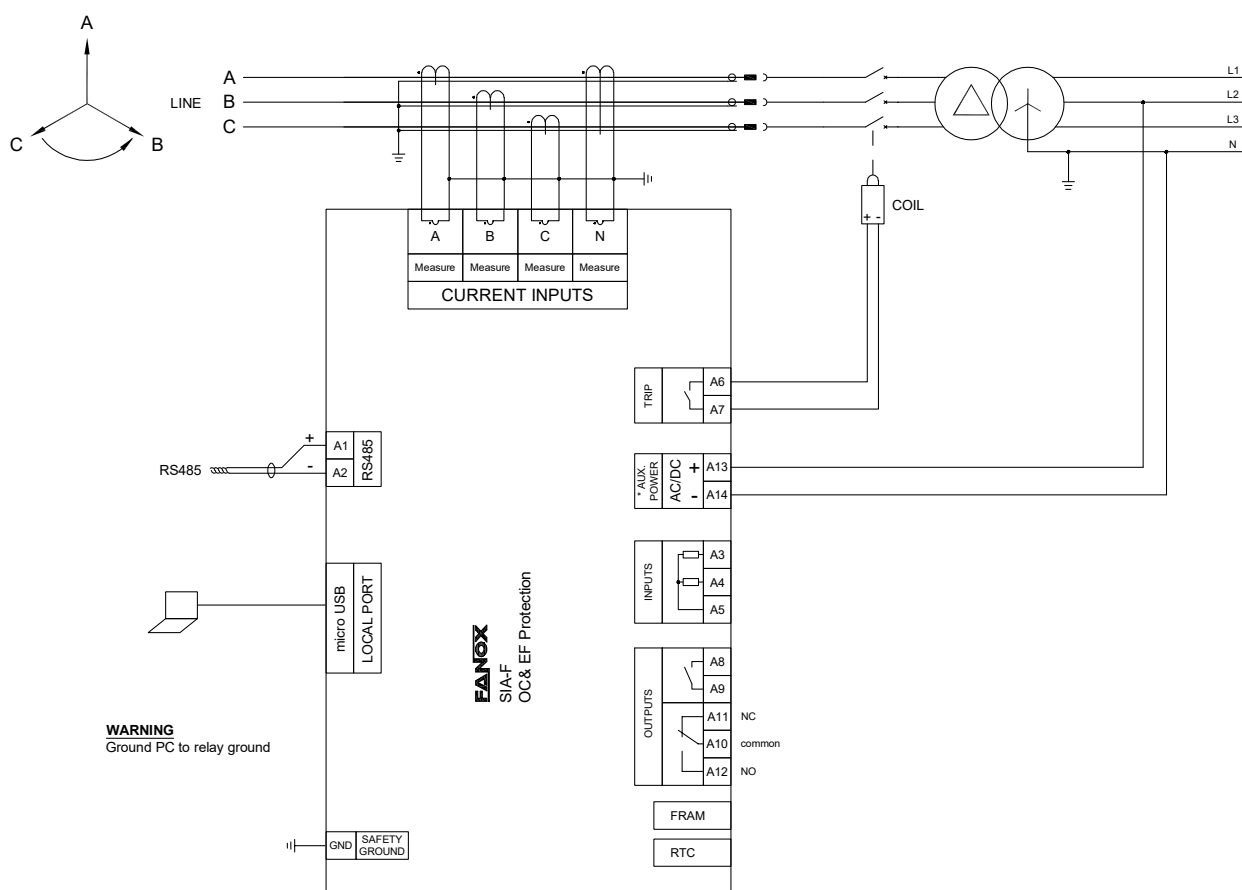
- 3 CT measurement ,1 CT sensitive neutral



(*) 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 5										PHASE CURRENT MEASUREMENT 1 A 5 A
	1 5 B									NEUTRAL CURRENT MEASUREMENT 1 A 5 A 0.2 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:

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