



SIA-C

Dual & Self Powered

Overcurrent & Earth Fault Protection / Dual & Self Powered

Secondary Distribution Protection Relay

SIA-C



Overcurrent and Earth Fault Protection Relay for Secondary Distribution

Dual & Self Powered



PROTECTIONS

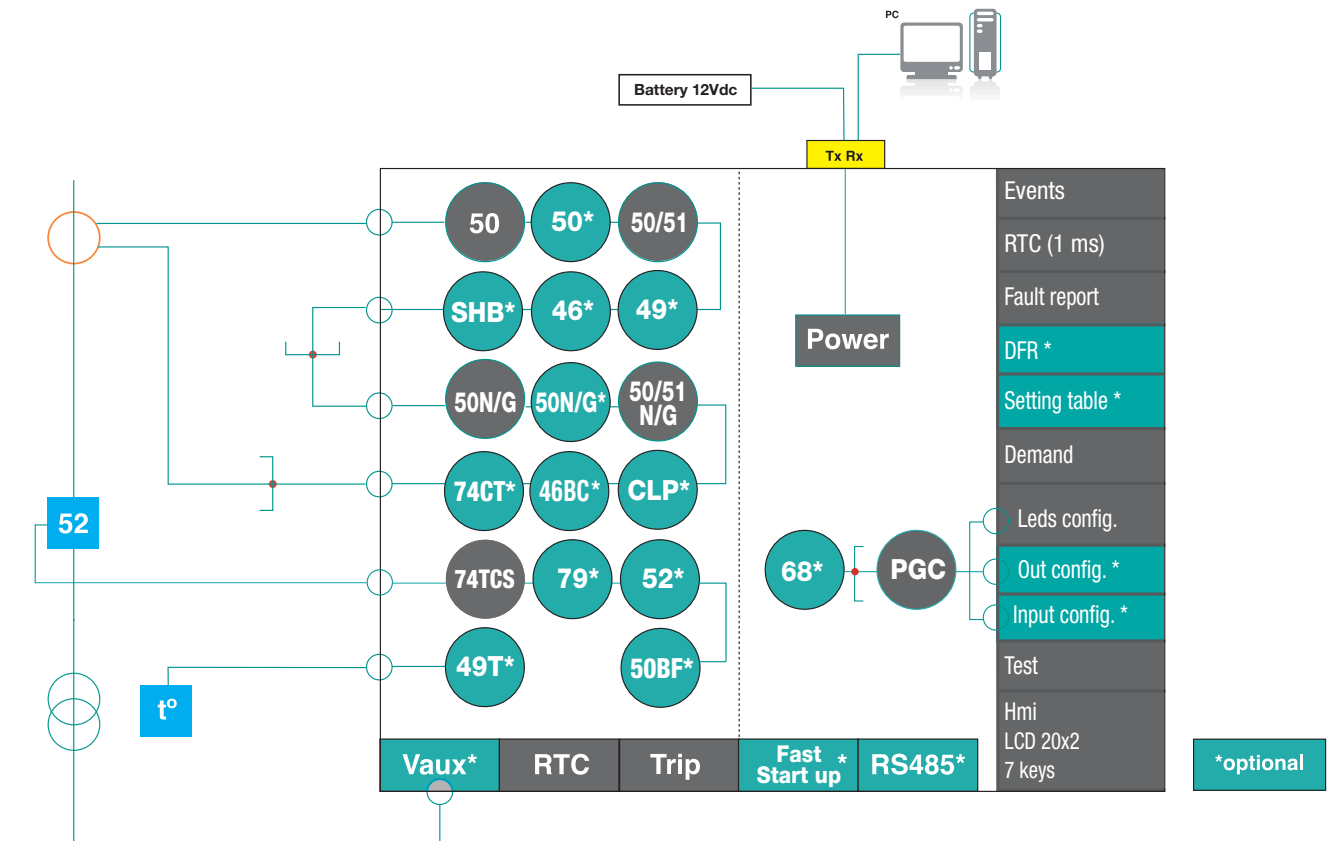
50	Instantaneous phase overcurrent
50/51	Inverse time phase overcurrent
50N/G	Instantaneous neutral overcurrent
50/51N/G	Inverse time neutral overcurrent
49T	External trip
52	Circuit breaker monitoring
79	Recloser
68	Zone selection interlocking
CLP	Cold Load Pickup
46	Negative Sequence instant. overcurrent
49	Thermal image
50BF	Circuit Breaker opening failure
46BC	Broken conductor detection
74CT	Phase CT supervision
74TCS	Trip Supervision
PGC	Programable Logic Control

Main characteristics

- The SIA-C is a overcurrent protection relay with self powered and dual powered (self + auxiliary) models.
- The relay is self powered using the operating current through three /5 (5VA) or /1 (2.5VA) standard current transformers fitted on the lines. These transformers are also used to obtain current measurements. Optionally, SIAC relay can be used with auxiliary power supply (24 Vdc, 230 Vac, 48 Vdc or 100-230 Vdc/ac). The equipment can be occasionally supplied by an external battery portable kit (KITCOM).
- Internal Commissioning battery as optional. (Lithium battery: 20 years lifetime).
- 50_1, 50/51, 50N/G_1, 50/51N/G, 74TCS and PGC protection functions.
- 50_2, 50N/G_2, CLP, 49, 46, 46BC, 50BF, 74CT, 79, 52, SHB, 49 and 68 as optional.
- Trip supervision through the control of the trip voltage level.
- Specific test menu is provided.
- High electromagnetic compatibility.
- The installation and subsequent maintenance of batteries is eliminated. The operating costs of the centre are reduced.
- In self powered mode, the start-up of the relay from low energy levels, 0.1 times of the nominal current in three phases, ensures capacity to trip.
- The line opening mechanism is activated either by means of a striker PRT, operated by the energy supplied by the relay itself, or by a coil using the TCM trip adapter in case it is necessary.
- There are bistable magnetic indicators which indicate the trip cause, maintaining their position even though the relay loses the supply (flags).
- Different sizes of SIA-C relay available by model list to fulfil all the needs of our customers and make the installation easier.
- SIA-C is fitted with the demand of current (Load Data Profiling) with the following characteristics:
 - Number of records: 168
 - Recording mode circular
 - Sampling rate (interval): configurable through communications: 1 – 60 min
- Non-volatile RAM memory in order to store up to 1,024 events and 20 fault report and, depending on model, disturbance fault recording (10 oscillographic records in COMTRADE format), maintaining date & time, thanks to its internal RTC (Real time clock) even without power supply.



Functions diagram SIA-C



Technical parameters SIA-C

Function 50_1	Function Enable: yes/no/SHB	Function 50N/G_1	Function Enable: yes/no/SHB
	Current Tap: 0.10 to 30 x In (step 0.01 x In)		Current Tap: 0.10 to 30 x In (step 0.01 x In)
	Time Delay: 0.02 to 300 s (step 0.01 s)		Time Delay: 0.02 to 300 s (step 0.01 s)
Function 50_2 (*)	Activation level 100%	Function 50N/G_2 (*)	Activation level 100%
	Deactivation level 95%		Deactivation level 95%
	Instantaneous deactivation		Instantaneous deactivation
	Timing accuracy:		Timing accuracy:
	- Without SHB permitted: ± 20 ms or ± 0.5% (greater of both).		- Without SHB permitted: ± 20 ms or ± 0.5% (greater of both).
	- With SHB permitted: ± 50 ms or ± 0.5% (greater of both).		- With SHB permitted: ± 50 ms or ± 0.5% (greater of both).
Function 50/51	Function Enable: yes/no/SHB	Function 50/51 N/G	Function Enable: yes/no/SHB
	Current Tap: 0.10 to 7 x In (step 0.01 x In)		Current Tap: 0.10 to 7 x In (step 0.01 x In)
	Curves: IEC 60255-151 and IEEE		Curves: IEC 60255-151 and IEEE
	Curve type: IEC Inverse curve, IEC very inverse curve, IEC extremely inverse curve, IEC long time inverse, IEEE Inverse curve, IEEE very inverse curve, IEEE extremely inverse curve.		Curve type: IEC Inverse curve, IEC very inverse curve, IEC extremely inverse curve, IEC long time inverse, IEEE Inverse curve, IEEE very inverse curve, IEEE extremely inverse curve.
	Time Delay: 0.02 to 300 s (step 0.01 s)		Time Delay: 0.02 to 300 s (step 0.01 s)
	Time Dial (TMS): 0.02 to 1.25 (step 0.01)		Time Dial (TMS): 0.02 to 1.25 (step 0.01)
	Curve, activation level 110%		Curve, activation level 110%
	Curve, deactivation level 100%		Curve, deactivation level 100%
	Definite time, activation level 100%		Definite time, activation level 100%
	Definite time, deactivation level 95%		Definite time, deactivation level 95%
	Instantaneous deactivation		Instantaneous deactivation
	Timing accuracy for IEC and IEEE curve selection:		Timing accuracy for IEC and IEEE curve selection:
	- Without SHB permitted: ± 30 ms or ± 5% (greater of both).		- Without SHB permitted: ± 30 ms or ± 5% (greater of both).
- With SHB permitted: ± 50 ms or ± 5% (greater of both).	- With SHB permitted: ± 50 ms or ± 5% (greater of both).		
Timing accuracy for defined time selection:	Timing accuracy for defined time selection:		
- Without SHB permitted: ± 20 ms or ± 0.5% (greater of both).	- Without SHB permitted: ± 20 ms or ± 0.5% (greater of both).		
- With SHB permitted: ± 50 ms or ± 0.5% (greater of both).	With SHB permitted: ± 50 ms or ± 0.5% (greater of both).		

(*) Optional depending on model

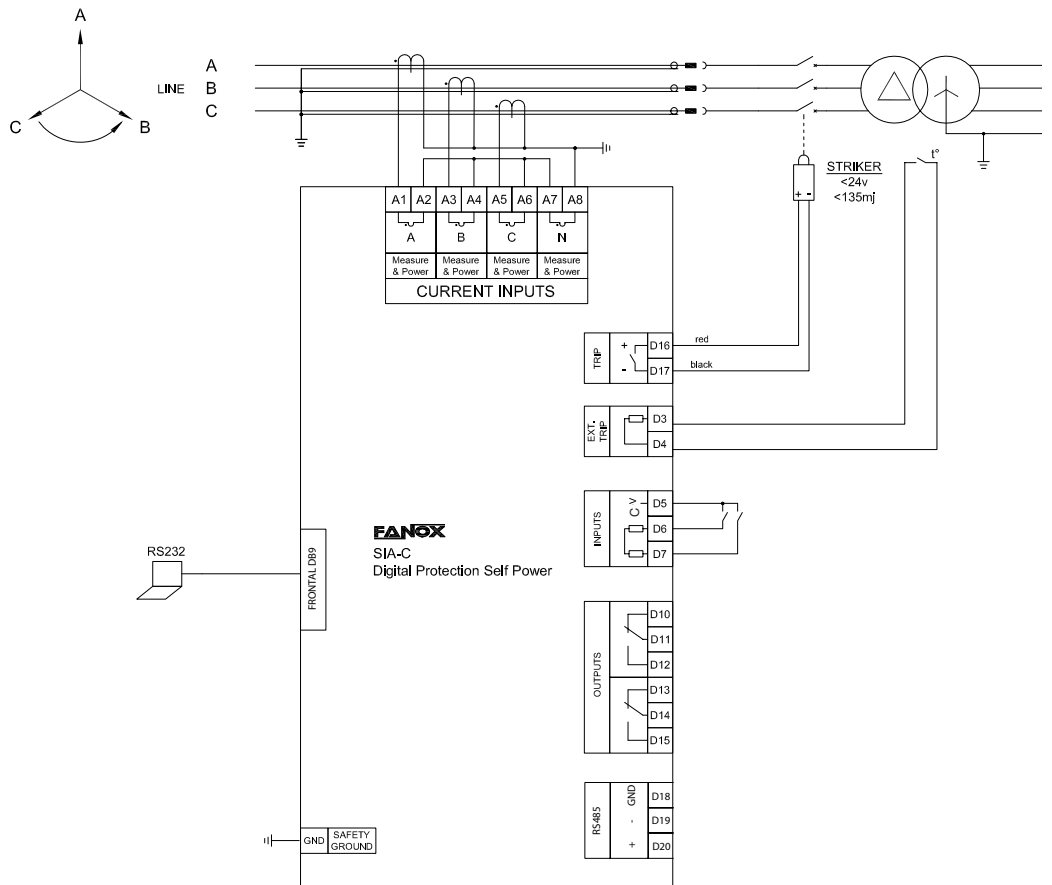
Technical parameters SIA-C

Function 46 (*)	Function Enable: yes/no/SHB	Programmable logic control (PGC)	OR4, OR4_LATCH, OR4_PULSES, oR4_TIMERUP, OR4_PULSE, NOR4, AND4_LATCH, NOR4_TIMERUP, NOR4_PULSE, AND4, AND4_PULSES, AND4_TIMERUP, AND4_PULSE, NAND4, NAND4_TIMERUP, NAND4_PULSE, NOR4_PULSES			
	Current Tap: 0.10 to 7 x In (step 0.01 x In)		Settings groups (*)	Adaptation A and C: 3 settings groups Activated by inputs or by general settings.		
	Curves: IEC 60255-151 and IEEE			Adaptation B: 4 settings groups Activated by inputs or by general settings		
	Curve Type: IEC Inverse curve, IEC very inverse curve, IEC extremely inverse curve, IEC long time inverse, IEEE Inverse curve, IEEE very inverse curve, IEEE extremely inverse curve.			Disturbance Fault Recording (DFR)	20 fault reports, 16 events in each 10 COMTRADE records of 50 cycles: 3 prefault and 47 postfault cycles (*)	
	Time Delay: 0.02 to 300 s (step 0.01 s)				Load data Profiling (Current Demand)	Demand of current with the following characteristics: - Number of records: 168 - Recording mode circular - Sampling rate (interval): configurable through communications: 1 – 60 min - Record format: Date/Time IMAX (in interval) IMAX (actual) IA IB IC IN
	Time Dial (TMS): 0.02 to 1.25 (step 0.01)			Trip output		For Striker: 24 Vdc-135 mJ For coil (optionally with TCM adapter): 250 Vac – 8A 30 Vdc – 8A Resistive load (cos φ = 1)
	Curve, activation level 110%					Signaling outputs (*)
	Curve, deactivation level 100%			Signaling inputs (*)		
	Definite time, activation level 100%					Frequency
	Definite time, deactivation level 95%			Current measurement		
Instantaneous deactivation	Communication	RS232 port: Modbus RTU RS485 port: Modbus RTU (*) RS485 port: Modbus RTU or IEC 60870-5-103 (*)				
Timing accuracy for IEC and IEEE curve selection: - Without SHB permitted: ± 30 ms or ± 5% (greater of both). - With SHB permitted: ± 50 ms or ± 5% (greater of both).		Auxiliary supply (*)	230 Vac ±20 % 24 Vdc ±10 % 48 Vdc ±10 % 100-230 Vdc/Vac ±15 %			
Timing accuracy for defined time selection: - Without SHB permitted: ± 20 ms or ± 0.5% (greater of both). - With SHB permitted: ± 50 ms or ± 0.5% (greater of both).	Battery supply		Externally, with adapter (Kitcom) DB9 port Internal commissioning battery (*)			
Function 46BC (*)		Function Enable: Yes/No	Self-powering from current	Self powered with /5 or /1 standard CT: l> 0.1xIn three phase l> 0.2xIn single phase		
	Current tap: 15 to 100 % (step 1%)	Environment		Operating temperature: -40 to 70°C Storage temperature: -40 to 80 °C Humidity: 95%		
	Time Delay: 0.02 to 300 s (step 0.01 s)		Transformers	Power supply and measurement CT /5 or /1		
	Timing accuracy: ±30 ms or ±0.5% (greater of both)	Mechanical features		Metallic box Panel Mounting Height x Width: Compact Vertical model:177 x 155 (mm) Standard Vertical model: 177 x 189 (mm) Horizontal model: 177.8 x 290.3 (mm) Depth: Compact Vertical model:132.8 mm / 135 mm for the withdrawable model Standard Vertical model: 145.8 (mm) Horizontal model: 100.75 mm Weight: 3.5 Kg IP-54		
Function 50BF (*)	Function Enable: Yes/No		Function 74CT (*)	Function Enable: yes/no Time Delay: 0.02 to 300 s (step 0.01 s) Timing accuracy: ±30 ms or ±0.5% (greater of both)		
	Time Delay: 0.02 to 1.00 s (step 0.01 s)			Function 74TCS	Trip supervision through the control of the trip voltage level.	
	Open circuit breaker activation threshold: 8% In		Function 49T (*)		Charging time 10 s. It is activated by short-circuiting the terminals without external supply	
	Open circuit breaker reset threshold: 10% In			Function 68 (*)	Available through configurable inputs and outputs thanks to programmable logic	
Configurable function start	Circuit breaker monitoring (*)		Excessive number of openings: 1 to 10,000 (step 1) Maximum accumulated amps: 0 to 100,000 (M(A²)) (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 49 (*)			Function Enable: Yes/No	Function 79 (*)	Function Enable: Yes/No Hold Enable: Yes/No/No Time Number of reclosings: 1 to 5 Reclosing time 1, 2, 3, 4, 5: 0.02 to 300 s (step 0.01 s) Hold time: 0.02 to 300 s (step 0.01 s) Reset time: 0.02 to 300 s (step 0.01 s) Safe time: 0.02 to 300 s (step 0.01 s) Locking possibilities: pulse inputs, level inputs, commands.	
	Current Tap: 0.1 to 2.4 xIn (step 0.01)		Function 79 (*)		Function Enable: Yes/No Hold Enable: Yes/No/No Time Number of reclosings: 1 to 5 Reclosing time 1, 2, 3, 4, 5: 0.02 to 300 s (step 0.01 s) Hold time: 0.02 to 300 s (step 0.01 s) Reset time: 0.02 to 300 s (step 0.01 s) Safe time: 0.02 to 300 s (step 0.01 s) Locking possibilities: pulse inputs, level inputs, commands.	
	ζ heating: 3 to 600 min (step 1 min)			Function 79 (*)	Function Enable: Yes/No Hold Enable: Yes/No/No Time Number of reclosings: 1 to 5 Reclosing time 1, 2, 3, 4, 5: 0.02 to 300 s (step 0.01 s) Hold time: 0.02 to 300 s (step 0.01 s) Reset time: 0.02 to 300 s (step 0.01 s) Safe time: 0.02 to 300 s (step 0.01 s) Locking possibilities: pulse inputs, level inputs, commands.	
	ζ cooling: 1 to 6 ζ heating (step 1)		Function 79 (*)		Function Enable: Yes/No Hold Enable: Yes/No/No Time Number of reclosings: 1 to 5 Reclosing time 1, 2, 3, 4, 5: 0.02 to 300 s (step 0.01 s) Hold time: 0.02 to 300 s (step 0.01 s) Reset time: 0.02 to 300 s (step 0.01 s) Safe time: 0.02 to 300 s (step 0.01 s) Locking possibilities: pulse inputs, level inputs, commands.	
	Alarm: 20 to 99 % (step 1%)	Function 79 (*)		Function Enable: Yes/No Hold Enable: Yes/No/No Time Number of reclosings: 1 to 5 Reclosing time 1, 2, 3, 4, 5: 0.02 to 300 s (step 0.01 s) Hold time: 0.02 to 300 s (step 0.01 s) Reset time: 0.02 to 300 s (step 0.01 s) Safe time: 0.02 to 300 s (step 0.01 s) Locking possibilities: pulse inputs, level inputs, commands.		
	Trip level: 100%		Function 79 (*)	Function Enable: Yes/No Hold Enable: Yes/No/No Time Number of reclosings: 1 to 5 Reclosing time 1, 2, 3, 4, 5: 0.02 to 300 s (step 0.01 s) Hold time: 0.02 to 300 s (step 0.01 s) Reset time: 0.02 to 300 s (step 0.01 s) Safe time: 0.02 to 300 s (step 0.01 s) Locking possibilities: pulse inputs, level inputs, commands.		
Deactivation level: 95% of alarm level	Function 79 (*)	Function Enable: Yes/No Hold Enable: Yes/No/No Time Number of reclosings: 1 to 5 Reclosing time 1, 2, 3, 4, 5: 0.02 to 300 s (step 0.01 s) Hold time: 0.02 to 300 s (step 0.01 s) Reset time: 0.02 to 300 s (step 0.01 s) Safe time: 0.02 to 300 s (step 0.01 s) Locking possibilities: pulse inputs, level inputs, commands.				
Trip time accuracy: ± 5% over the theoretical value		Function 79 (*)	Function Enable: Yes/No Hold Enable: Yes/No/No Time Number of reclosings: 1 to 5 Reclosing time 1, 2, 3, 4, 5: 0.02 to 300 s (step 0.01 s) Hold time: 0.02 to 300 s (step 0.01 s) Reset time: 0.02 to 300 s (step 0.01 s) Safe time: 0.02 to 300 s (step 0.01 s) Locking possibilities: pulse inputs, level inputs, commands.			
Trip time curves are valid under 20 times the adjusted tap. With currents higher than 20 times the adjusted tap, trip time and thermal image value are truncated to 20 times the adjusted tap.	Function 79 (*)		Function Enable: Yes/No Hold Enable: Yes/No/No Time Number of reclosings: 1 to 5 Reclosing time 1, 2, 3, 4, 5: 0.02 to 300 s (step 0.01 s) Hold time: 0.02 to 300 s (step 0.01 s) Reset time: 0.02 to 300 s (step 0.01 s) Safe time: 0.02 to 300 s (step 0.01 s) Locking possibilities: pulse inputs, level inputs, commands.			

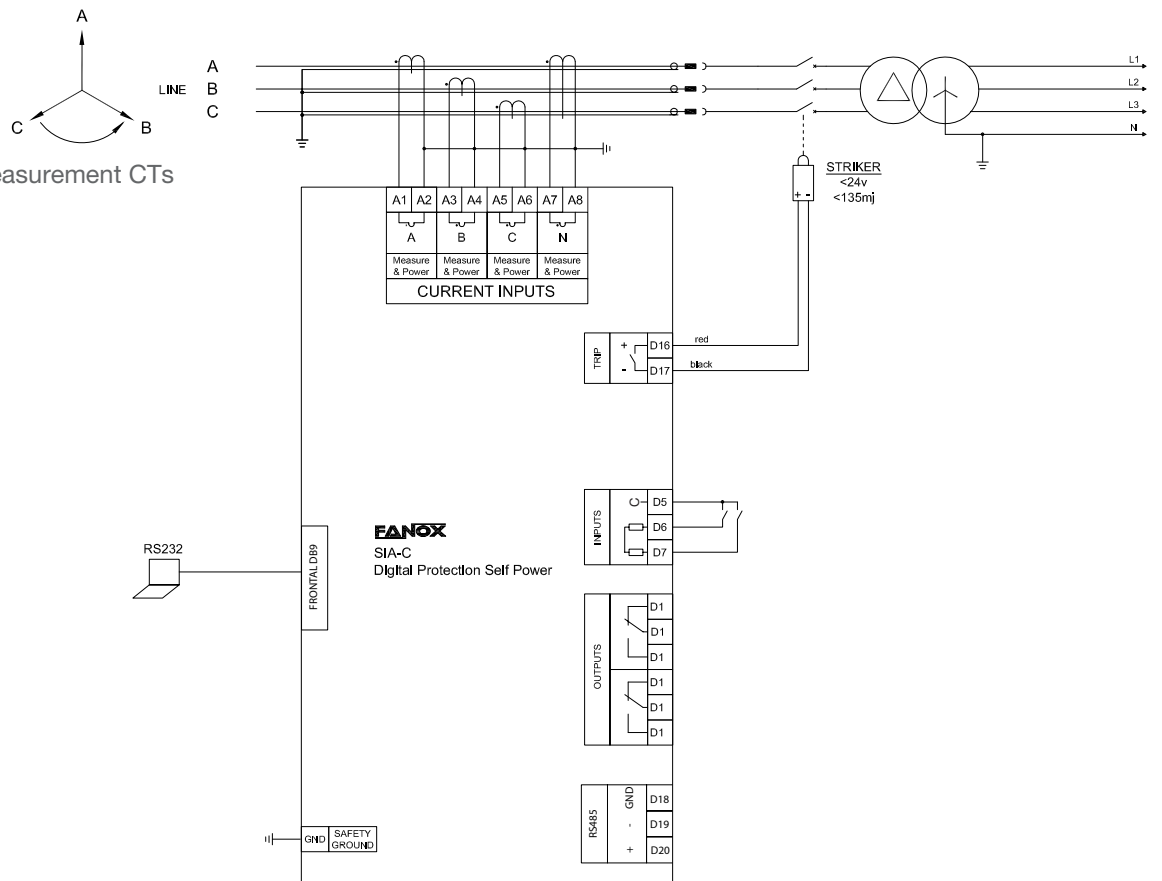
(*) Optional depending on model

Connections diagram SIA-C

- 3 Phases CTs
- 2 Inputs + 2 Outputs
- RS485
- Trip by means of Striker
- External trip



- 3 power supply-measurement CTs
- 1 neutral CT
- Striker

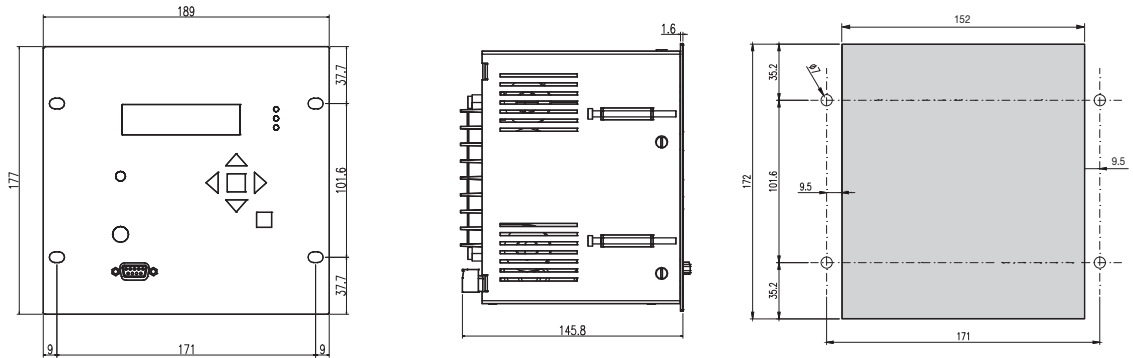


(*) Example of connections diagram

Dimensions and cutout SIA-C

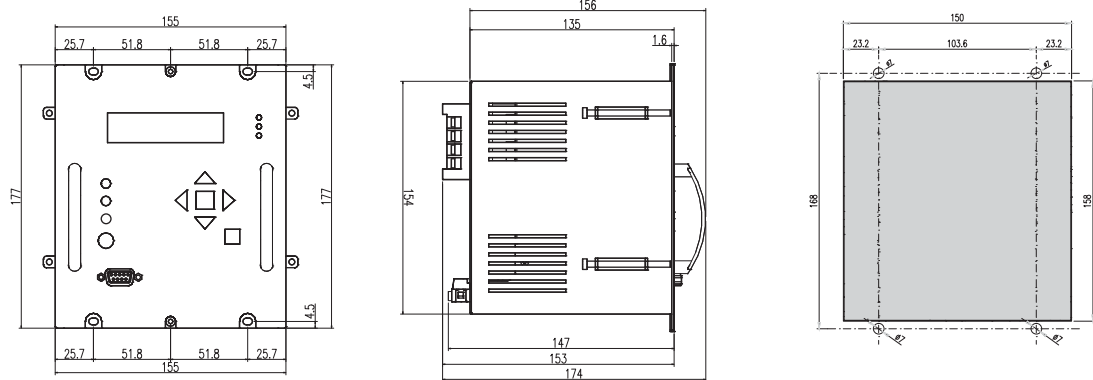
Vertical assembly

Mechanical assembly:
D



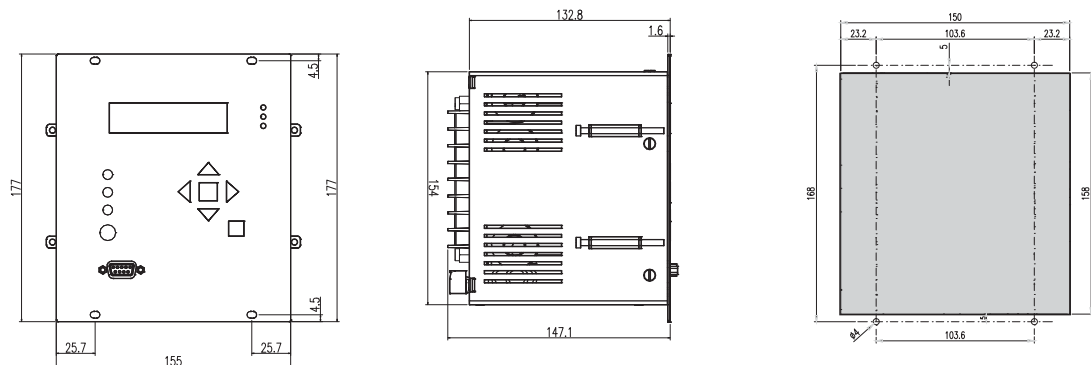
Withdrable Vertical assembly
Compact size

Mechanical assembly:
F



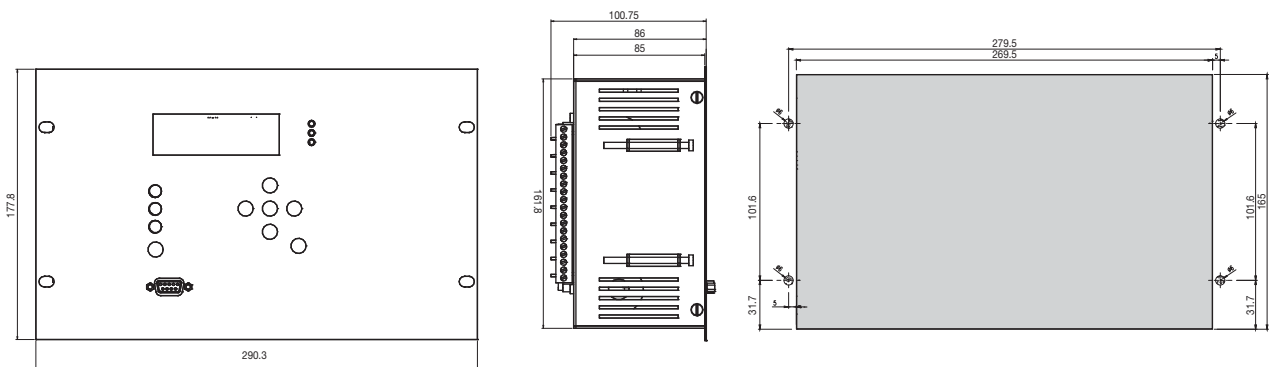
Vertical assembly
Compact size

Mechanical assembly:
E, G



Horizontal assembly

Mechanical assembly:
B, C



Selection & Ordering data SIA-C

SIA-C										Overcurrent & Earth Fault Protection Relay - Dual & Self Powered										PROTECTION FUNCTIONS
																				50_1 + 50/51 + 50N/G_1 + 50/51N/G +74TCS + PGC
1 5																				PHASE MEASUREMENT In = 1 A; (0,10 – 30,00 A) In = 5 A; (0,50 – 150,00 A)
1 5 A B																				NEUTRAL MEASUREMENT In = 1 A; (0,10 – 30,00 A) In = 5 A; (0,50 – 150,00 A) In = 0,1 A; (0,01 – 3,00 A) In = 0,2 A; (0,02 – 6,00 A)
										5 6										NET FREQUENCY 50 Hz 60 Hz
										0 1 3 4 5 A B D E F										POWER SUPPLY Self powered Self powered + 230 Vac (Dual) Self powered + 24 Vdc (Dual) Self powered + 48 Vdc (Dual) Self powered + 100-230 Vac-dc (Dual) Self powered + Commissioning battery Self powered + 230 Vac (Dual) + Commissioning battery Self powered + 24 Vdc (Dual) + Commissioning battery Self powered + 48 Vdc (Dual) + Commissioning battery Self powered +100-230 Vac-dc (Dual) + Commissioning battery
										0 1 2 3 4										ADDITIONAL FUNCTIONS Striker Striker and with external trip (49T) Coil Coil and with external trip (49T) Striker and 230 Vac adapted external trip
										0 1 2										COMMUNICATIONS RS232 (Modbus RTU) RS232 (Modbus RTU) + RS485 (Modbus RTU) RS232 (Modbus RTU) + RS485 (Modbus RTU or IEC60870-5-103)
										0 1 2 3										INPUTS-OUTPUTS Trip Trip + 2 outputs Trip + 2 outputs + 2 inputs Trip + 3 outputs
										1 2										MEMORY Non-volatile RAM memory Non-volatile RAM memory + Fast start-up
										A B C D										LANGUAGE English, Spanish and German English, Spanish and Turkish English, Spanish and French English, Spanish and Russian
										B C D E F G H I										MECHANICS Horizontal assembly with 1 magnetic Flag Horizontal assembly with 3 magnetic Flag Double rear terminals, Vertical assembly with 1 magnetic Flags Vertical, Compact Size with 3 magnetic Flags Vertical, Compact Size with 3 Flags, Backlighth LCD, Withdrawable Vertical Assembly, compact size with 1 magnetic indicator, Backlighth LCD Double rear terminals, Vertical assembly with 1 magnetic Flags with anticorrosive treatment Vertical, Compact Size with 3 magnetic Flags with anticorrosive treatment
										- A B C										ADAPTATION - + 50_2 + 50N/G_2 + 3 Settings group + CLP + 4 Settings groups + 50_2 + 50N/G_2 + 46 + 50BF+ 49 + 79 + 52 + 74CT + 46BC + SHB + 3 settings groups

Example of ordering code:

SIA C	1	1	5	0	0	0	3	2	A	F	A
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SIA C 1 1 5 0 0 3 2 A F A



“Our innovative spirit, the direct care of market requirements and our extensive experience in the manufacture of protection relays, have made our Self Powered Relays a reference worldwide.”



More than 40.000 Self Powered relays on site

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