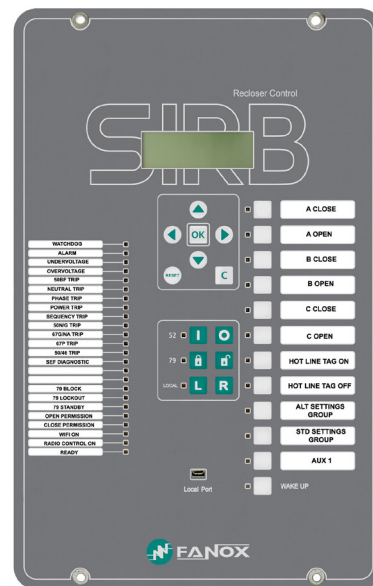


SIR-B

Recloser control

ANSI CODE PROTECTIONS	
50	Instantaneous phase overcurrent
51	Inverse Time phase overcurrent
67	Inverse Time Directional Phase Overcurrent
SOTF	Switch on to fault
50N	Instantaneous calculated neutral overcurrent
50G	Instantaneous measured neutral overcurrent
51N	Inverse Time calculated neutral overcurrent
51G	Inverse Time measured neutral overcurrent
67N	Inverse Time Directional Calculated Neutral Overcurrent
67G	Inverse Time Directional Measured Neutral Overcurrent
67NI	Inverse Time Directional Isolated Calculated Neutral Overcurrent
67GI	Inverse Time Directional Isolated Measured Neutral Overcurrent
46	Phase balance current protection
46BC	Broken Conductor Detection
37	Instantaneous phase undercurrent
SHB	Second Harmonic Blocking
59-L	Instantaneous Line overvoltage
59	Instantaneous bus bar overvoltage
59N-L	Instantaneous Calculated line neutral overvoltage
59N	Instantaneous Calculated bus bar neutral overvoltage
47-L	Phase Balance line voltage protection
47	Phase Balance bus bar voltage protection
27-L	Instantaneous Line undervoltage
27	Instantaneous bus bar undervoltage
27V1-L	Instantaneous line positive sequence undervoltage
27V1	Instantaneous bus bar positive sequence undervoltage
32	Directional Overpower
81O/U	Under/Overfrequency
81R	Rate of change of Frequency (ROCOF)
78	Out of Step (Vector Shift)
CLP	Cold Load pickup

79	AC Reclosing device
52	Breaker Wear Monitoring
DISC	Trip by pole discordance
25	Synchro Check
50BF	Circuit Breaker Failure
60CTS	Phase CT Supervision
60VTS	Phase VT Supervision
SCM	Sequence coordination mode
SZM	Sectionalizer mode
HLT	Hot Line Tag
86	Trip Lockout
PGC	Programmable logic control



- The SIR-B recloser control is designed to provide protective coordination and fault clearance of distribution systems.

- SIR-B is considered as is an **all-in-one recloser control** due to it **includes the driving electronic and the trip capacitor** and it can work with external battery or with super capacitors which allow the user to minimize the maintenance tasks.

- The SIR-B is designed to work with 3-phase reclosers, but it can provide single phase trips and reclose cycles, this is, it is provided with a monopolar circuit breaker control.

- 4 current inputs and 6 voltage inputs are included. The voltage inputs will depend on the selected model (standard voltage through VTs or LEA inputs).

- The SIR-B offers a module to manage the energy:

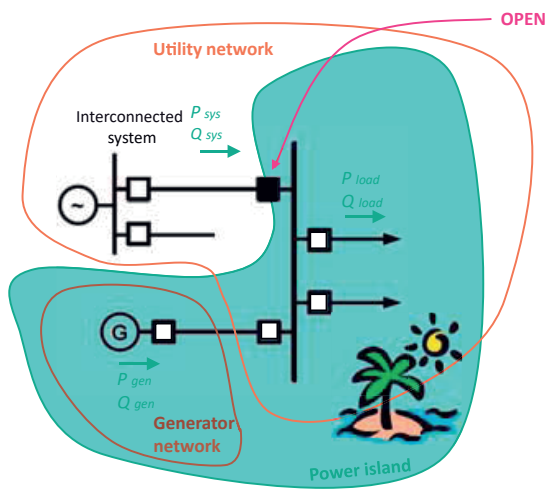
- Battery (12 Vdc) or Super capacitors (16 dc)
- 3 Analog open/close outputs for trip capacitors options: 30 Vdc, 50 Vdc, 100 Vdc, 150 Vdc or 220 Vdc.
- 12 Vdc output for 3G modem
- 8 Digital inputs
- 4 digital outputs

- Metallic box with high electromagnetic compatibility level (EMC) and wide range of operating temperature

- The SIR-B works with auxiliary power supply of 110-230 Vac/dc.



- Protection of decoupling, load shedding and loss of main (islanding). Loss of Main (islanding) occurs when part of the public utility network loses connection with the rest of the system. If this situation is not detected, then the generator could remain connected, causing a safety hazard within the network. Automatic reconnection of the generator to the network may occur causing damage to the generator and the network. SIL-G protection relay detects this situation thanks to its voltage and frequency functions focused on the Rate of change of frequency (ROCOF) method.



- Last gasp trip included thanks to the Energy management monitoring (EMM).

- Recloser function (ANSI 79) allows up to 4 attempts of reclosing cycles that are configurable by the user.

- To allow the communication, relays are provided with a local micro USB front port, wireless communication (WiFi) and with remote communication with different options (ports and protocols) on the rear side:

- Rear RS232 Port: Modbus RTU, IEC 60870-5-103 or DNP3.0 Serial.
- Rear RS485 Port: Modbus RTU, IEC 60870-5-103 or DNP3.0 Serial.
- Rear RJ45 Port: Modbus TCP/IP, DNP3.0 TCP/IP or IEC60870-5-104.
- Rear RJ45 Port: IEC61850.

- SIL-G is fitted with the demand of power (Load Data Profiling) with the following characteristics:

- Number of records: 2160.
- Recording mode circular.
- Sampling rate (interval): configurable through communications (1-60 min).

- Alarms panel is available.

- SIL-G is provided with non-volatile RAM memory in order to store up to 3072 events and disturbance fault recording (DFR), maintaining date & time thanks to its internal RTC (real Time Clock).

- 5 records in data and COMTRADE format (260 cycles each record): 1 to 8 pre-fault cycles + 252 to 259 postfault cycles.
- 25 records in data and COMTRADE format (60 cycles each record): 1 to 8 pre-fault cycles + 52 to 59 postfault cycles.
- 50 records in data and COMTRADE format (30 cycles each record): 1 to 8 pre-fault cycles + 22 to 29 postfault cycles.
- 100 records in data and COMTRADE format (15 cycles each record): 1 to 8 pre-fault cycles + 7 to 14 postfault cycles.)

- 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).

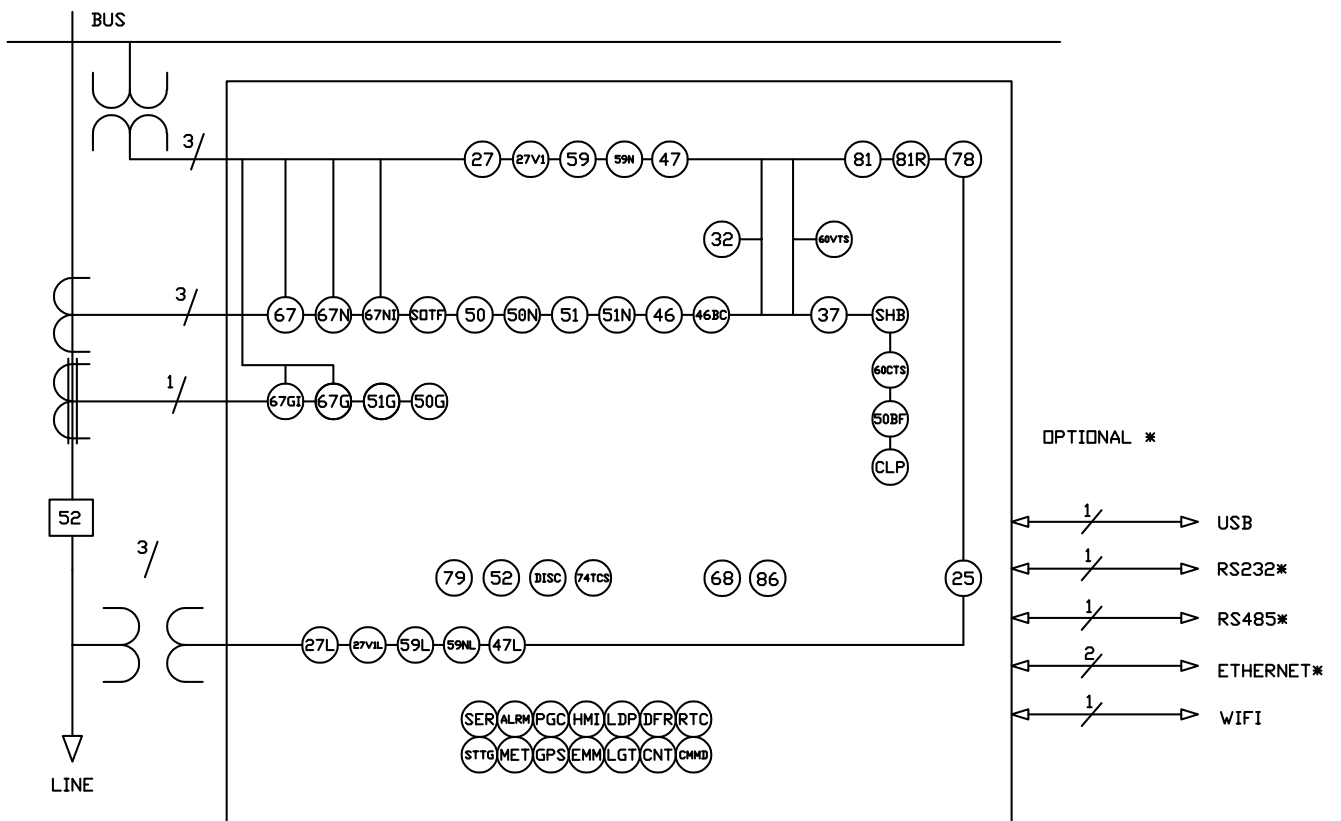
Protections functions SIR-B

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60VTS	Phase VT Supervision
SCM	Sequence coordination mode
SZM	Sectionalizer mode
HLT	Hot Line Tag
86	Trip Lockout
PGC	Programmable logic control

ADDITIONAL FUNCTIONS	
CNT	Counters
RTC	Real Time Clock
ALRM	Alarm panel
PGC	Programmable Logic Control
HMI	Human Machine Interface
SER	Sequential Event Recording
DFR	Disturbance Fault Recording
LDP	Load Data Profiling
MET	Metering
STTG	Settings Groups
CMMD	Commands
GPS	Global positioning System
EMM	Energy Management monitoring
LGT	Last Gasp Trip

Functions diagram SIR-B



Selection & Ordering data SIR-B

SIR-B	Recloser Control									
1										PHASE CURRENT MEASUREMENT In= 1 A
	1									NEUTRAL CURRENT MEASUREMENT In= 1 A
		0 1 2								VOLTAGE MEASUREMENT VT with standard range Capacitive LEA Resistive LEA
			B							POWER SUPPLY 110-230 Vdc/Vac
				0						ADDITIONAL FUNCTIONS -
					A O B P D					COMMUNICATIONS A: RS232 (Modbus RTU, IEC60870-5-103 or DNP3.0 Serial) O: RS485 (Modbus RTU, IEC60870-5-103 or DNP3.0 Serial) B: RS232 (Modbus RTU, IEC60870-5-103 or DNP3.0 Serial) + RJ45 (Modbus TCP, IEC60870-5-104 or DNP3.0 TCP) P: RS485 (Modbus RTU, IEC60870-5-103 or DNP3.0 Serial) + RJ45 (Modbus TCP, IEC60870-5-104 or DNP3.0 TCP) D: RJ45 (IEC 61850) + RJ45 (Modbus TCP, IEC60870-5-104 or DNP3.0 TCP)
						1 2 3 4 5				INPUTS AND OUTPUTS 8 Inputs + 4 Digital Outputs + 3 Analog outputs 30 Vdc 8 Inputs + 4 Digital Outputs + 3 Analog outputs 50 Vdc 8 Inputs + 4 Digital Outputs + 3 Analog outputs 150 Vdc 8 Inputs + 4 Digital Outputs + 3 Analog outputs 220 Vdc 8 Inputs + 4 Digital Outputs + 3 Analog outputs 100 Vdc
							0			MECHANICAL ASSEMBLY Vertical Assembly
								A E F		LANGUAGE English, Spanish, German and French English, Spanish, Turkish and Russian English, Spanish, Portuguese, Polish
									A	ADAPTATION Default functions: 50(3) + 50N + 50G+ 51(3), 51N + 51G + 67(3) + 67N + 67G+ 67NI + 67GI+ SOTF + 46 + 46BC + 37 + 27-L + 27(2) + 27V1-L + 27V1 + 47-L + 47 + 59-L + 59(2) + 59N-L + 59N + 32(4) + 81O/U(4) + 81R(4) + 78 + CLP + SHB + 50BF + 79 + 52 + pole discordance + 86 + 60CTS + 60VTS + SCM + SZM + HLT + 25

Example of ordering code:

SIR-B	1	1	0	B	0	A	4	0	A	A	SIR B 1 1 0 B 0 A 4 0 A A
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