

SIR-B

RECLOSER CONTROL

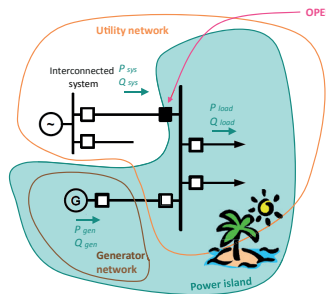
Main characteristics



- The SIR-B recloser control is designed to provide protective coordination and fault clearance of distribution systems.
- **SIR-B 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 Vdc)
 - 3 Analog open/close outputs (trip capacitors options: 24 Vdc, 48 Vdc, 155 Vdc or 220 Vdc)
 - 12 Vdc output for 3G modem
 - 8 Digital inputs
 - 4 digital outputs
- SIR-B works with auxiliary power supply 90-300 Vdc/110-230 Vac.
- Protects decoupling, load shedding and loss of main (islanding). Loss of Mains (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 is included thanks to the Energy management Monitoring (EMM).
- 79 protection function (Recloser) allows up to 4 attempts of reclosing which can be programmed by the user.
- SIR-B has metallic box with high electromagnetic compatibility level (EMC) and wide range of operating temperature.
- Direct signaling/control of the circuit breaker (52 function), of the recloser (79 function) and the communications local/remote control.
- To allow the communication locally, relays have a front USB port. Depending on model, WiFi local communication is available.
- For remote communications several rear ports are available with the following protocols (depending on model):
 - Serial rear port RS485: Modbus RTU, DNP3.0 Serial or IEC 60870-5-103
 - Ethernet rear port RJ45: Modbus TCP/IP, DNP3.0 TCP/IP or IEC 61850
 - Fiber Optic: redundant communication (HSR – IEC 61850)
- Alarms panel is available.
- SIR-B can show different measurements like:
 - Phase currents, neutral (measured and calculated), maximum current, positive sequence current and negative sequence current.

PROTECTIONS

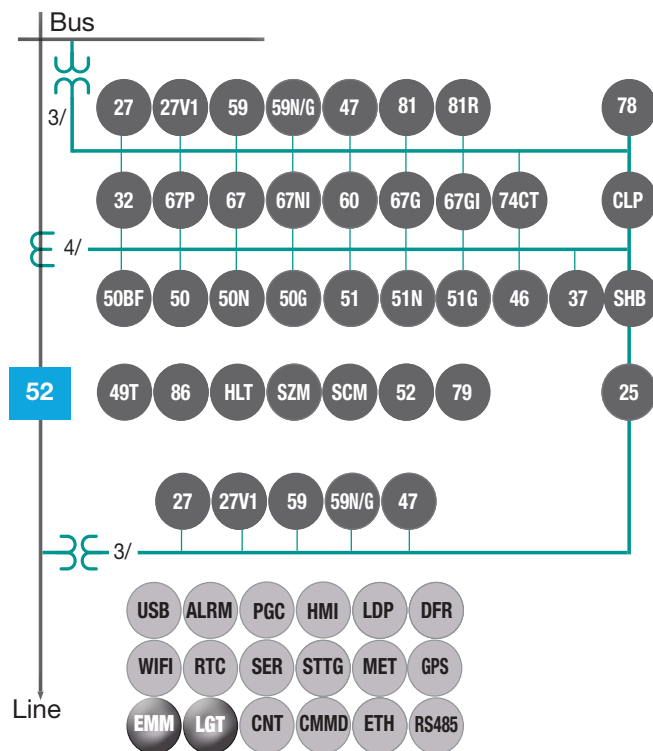
50	Phase Instantaneous overcurrent
50N	Neutral instantaneous overcurrent
50G	Ground instantaneous overcurrent
51	Phase AC Inverse time overcurrent
51N	Neutral inverse time overcurrent
51G	Ground inverse time overcurrent
67/51/50	Phase AC Inverse time overcurrent
67N	Neutral AC inverse time overcurrent
67G	Ground AC inverse time overcurrent
67GI	Isolated Ground AC inverse time overcurrent
46	Negative Sequence AC Inverse time overcurrent
46BC	Broken Conductor
37	Phase Instantaneous undercurrent
27-L	Line Phase Under voltage
27-B	Bus Bar Phase Under voltage
27V1-L	Line Positive Sequence Under voltage
27V1-B	Bus Bar Positive Sequence Under voltage
47-L	Line Negative Sequence Over voltage
47-B	Bus Bar Negative Sequence Over voltage
59-L	Line Phase Over voltage
59-B	Bus Bar Phase Over voltage
59N/G-L	Line Neutral Over voltage
59N/G-B	Bus Bar Neutral Over voltage
32	Directional Power
81O/U	Under/Over Frequency
81R	ROCOF (Rate Of Change Of Frequency)
78	Vector Shift
CLP	Cold Load Pickup
SHB	Second Harmonic Blocking
50BF	Breaker Failure
79	AC reclosing device
52 + pole discordance	Breaker Wear Monitor
86	Trip Latch
49T	External Trip
74CT	CT Circuit Supervision
60	VT Circuit Supervision
SCM	Sequence Coordination Mode
SZM	Sectionalizer Mode
HLT	Hot Line Tag
25	Synchro check



- Second harmonic current per phase.
- Phase to neutral, phase to phase voltages, neutral voltage (calculated and measured), maximum voltage, phase B line voltage (optional for the model with ANSI 25), positive sequence voltage and negative sequence voltage.
- Current angle for each phase and neutral (referred to VA). Voltage angle per each phase and neutral (referred to V-A). Phase B Line voltage angle (optional for the model with ANSI 25).
- Active, reactive and apparent powers (3- phase and per phase).
- Thermal image.
- Line frequency and busbar frequency.
- Rate of change of frequency.
- Up to 100 oscillographic records and fault reports (1500 cycles in total considering the number of cycles configurable to 15, 30 or 60 cycles), load data profiling with up to 2160 records and 2048 events can be recorded in non-volatile RAM memory maintaining the date and time thanks to its internal RTC (Real Time Clock).

Technical specifications

Functions diagram SIR-B



CNT	Counters
RTC	Real time Clock
ALRM	Alarm panel
PGC	Programable Logic Control
HMI	Human machine Interface
SER	Sequential Event recording
DFR	Disturbance Fault Recorder
LDP	Load Data Profiling
MET	Metering
CMMD	Setting Groups
USB	USB local port
RS485	RS485 serial port
ETH	Ethernet communication
WIFI	WIFI Communication
GPS	Global Positioning System
EMM	Energy Management Monitoring
LGT	Last Grasp Trip

Technical specifications

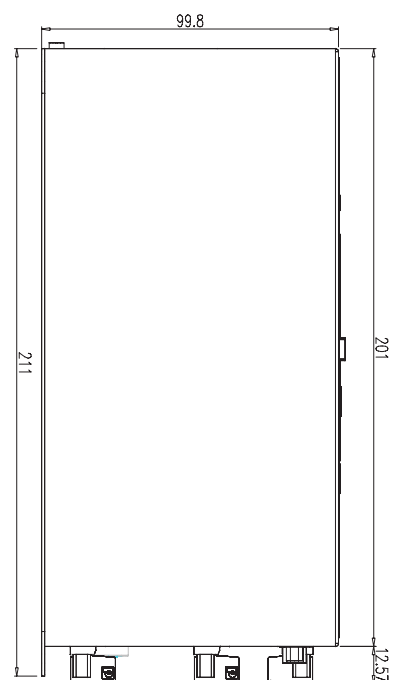
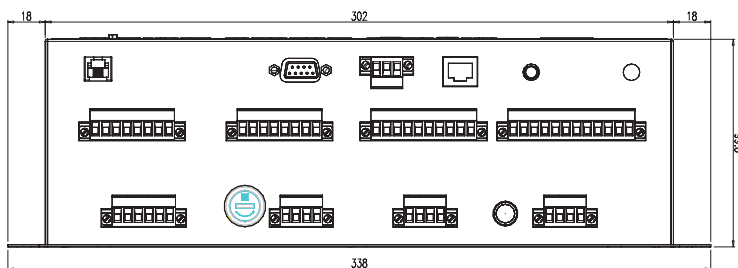
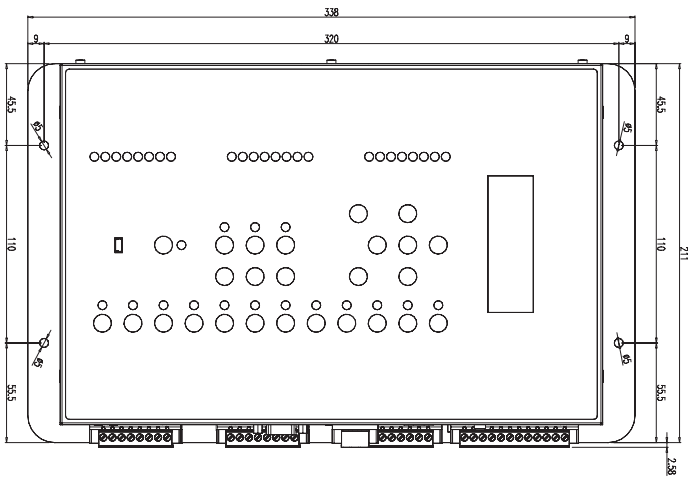
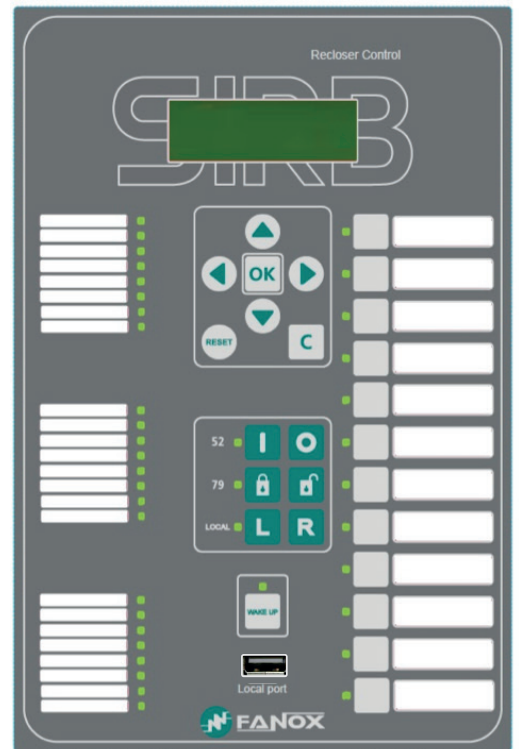
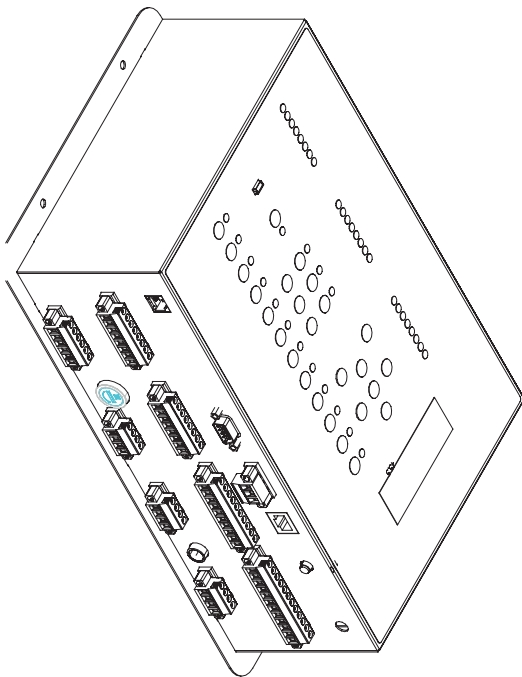
Technical parameters SIR-B

	DESCRIPTION	ANSII	SIR-B	
Current functions	Phase Instantaneous overcurrent	50	3	
	Neutral Instantaneous overcurrent	50N	1	
	Ground instantaneous overcurrent	50G	1	
	Phase AC Inverse time overcurrent	51	3	
	Neutral AC Inverse time overcurrent	51N	1	
	Ground inverse time overcurrent	51G	1	
	Phase AC Inverse time overcurrent	67	3	
	Neutral AC Inverse time overcurrent	67N	1	
	Ground AC Inverse time overcurrent	67G	1	
	Isolated Neutral AC Inverse time overcurrent	67NI	1	
	Isolated Ground AC inverse time overcurrent	67GI	1	
	Negative Sequence AC Inverse time overcurrent	46	1	
	Broken Conductor	46BC	1	
Voltage functions	Line Phase Under voltage	37	1	
	Line Phase Under voltage	27-L	1	
	Bus Bar Phase Under voltage	27-B	2	
	Line Positive Sequence Under voltage	27V1-L	1	
	Bus Bar Positive Sequence Under voltage	27V1-B	1	
	Line Negative Sequence Over voltage	47-L	1	
	Bus Bar Negative Sequence Over voltage	47-B	1	
	Line Phase Over voltage	59-L	1	
	Bus Bar Phase Over voltage	59-B	2	
	Line Neutral Over voltage	59N/G-L	1	
	Bus Bar Neutral Over voltage	59N/G-B	1	
	Power functions	Directional Power	32	4
	Frequency functions	Under/Over Frequency	81U/O	4
ROCOF (Rate Of Change Of Frequency)		81R	4	
Vector Shift		78	1	
Control & Supervision functions	Breaker Failure	50BF	1	
	Second Harmonic Blocking	SHB	1	
	Breaker Wear Monitor	52	1	
	Trip by pole discordance	DISC	√	
	AC reclosing device	79	4 Max	
	VT Circuit Supervision	60	1	
	CT Circuit Supervision	74CT	1	
	Cold Load Pickup	CLP	1	
	Sequence Coordination Mode	SCM	1	
	Sectionalize Mode	SZM	1	
	Hot Line Tag	HLT	√	
	Trip Latch	86	√	
	External Trip	49T	1	
	Synchro check	25	1	
	Settings Group	SETG	6	
	Programmable loGic Control	PGC	√	
	Energy Management & Monitoring	EMM	√	
Last Gasp Trip	LGT	√		
3 Phase trip enable	3PT	√		

	DESCRIPTION	ANSII	SIR-B
Reporting	Disturbance Fault Recorder	DFR	1500 cycle at 32 sample/cycle
	Sequential Events Recorder	SER	2048
	Load Data Profiling	LDP	2160
Communication	Alarms Panel	ALRM	32
	Local USB port	USB	1
	Local Wi-Fi port	WIFI	optional
	Remote RS485 port	RS485	1
	Remote Ethernet port	ETH	optional
	SICom User Program for Windows 7/8/10	SICOM	√
	Human Machine Interface	HMI	20x4 LCD+ 8 key
	Security Compliance	SeCo	4 passwords + 4 Access Level
Protocols	DNP3	DNP3	√
	Modbus	MODB	√
	IEC60870-5-103	103	√
	IEC61850	104	optional
	Security Compliance	850	optional
Inputs	Digital Inputs	DINP	4+4
	Analog Current Inputs	AINP	4
	Analog Voltage Inputs		6
Outputs	Digital outputs	DOUTP	4
	Analog Open/Close outputs	AOUTP	3
LEDs	Signaling Indicators	LED	24
Buttons	Command Buttons	BUTT	12+6+1(son 8)
Power supply	Auxiliary Power Supply	AUX	90-300Vdc / 110-230Vac
Miscellaneous	Real-Time Clock	RTC	72 hours without power
	GPS Date/time synchronism	GPS	√
	Test menu	TEST	√
	Self-diagnosis	DIAG	√
Commands	Open Command	CMMD	√
	Close Command		√
	Block Recloser Command		√
	Unblock Recloser Command		√
	Time synchronize Command		√
	Local Command		√
	Tele control Command		√
	Hot Line Tag On Command		√
Hot Line Tag Off Command	√		
Counters	Opening Numbers	CNT	√
	Reclosing Numbers		√
	Amperes Accumulates: I2t		√
	Energy active positive		√
	Energy active negative		√
	Energy reactive positive		√
	Energy reactive negative		√

Technical specifications

Dimensions diagram SIR-B



Selection & Ordering data SIR-B

SIR-B										Recloser control										PROTECTION FUNCTIONS
1																				50 (3) + 50N + 50G + 51 (3) + 51N + 51G + 67/51/50 (3) + 67N + 67G + 67NI + 67GI + 46 + 46BC + 49T + 37 + 27-L + 27-B (2) + 27V1-L + 27V1-B + 47-L + 47-B + 59-L + 59-B (2) + 59N/G-L + 59N/G-B + 32 (4) + 81O/U (4) + 81R (4) + 78 + CLP + SHB + 50BF + 79 + 52 + pole discordance + 86 + 49T + 74CT + 60 + SCM + SZM + HLT + 25
										1										PHASE MEASUREMENT In=1 A
										0 1 2										NEUTRAL MEASUREMENT In=1 A
										B										VOLTAGE MEASUREMENT VT with standard range Capacitive LEA Resistive LEA
										0										POWER SUPPLY 90-300 Vdc/110-230Vac
										A B C O P Q										ADDITIONAL FUNCTIONS -
										1 2 3 4										COMMUNICATIONS RS232: Modbus RTU, IEC 60870-5-103 or DNP3.0 Serial RS232: Modbus RTU or IEC 60870-5-103 + Ethernet - RJ45: Modbus TCP or DNP3.0 TCP RS232: Modbus RTU, IEC 60870-5-103 or DNP3.0 Serial + Ethernet - RJ45: IEC 61850 RS485: Modbus RTU, IEC 60870-5-103 or DNP3.0 Serial RS485: Modbus RTU or IEC 60870-5-103 + Ethernet - RJ45: Modbus TCP or DNP3.0 TCP R485: Modbus RTU, IEC 60870-5-103 or DNP3.0 Serial + Ethernet - RJ45: IEC 61850
										0										INPUTS-OUTPUTS 8 Digital Inputs + 4 Digital outputs + 3 analog outputs at 24 Vdc 8 Digital Inputs + 4 Digital outputs + 3 analog outputs at 48 Vdc 8 Digital Inputs + 4 Digital outputs + 3 analog outputs at 155 Vdc 8 Digital Inputs + 4 Digital outputs + 3 analog outputs at 220 Vdc
										A B C D E										MECHANICS Vertical Assembly
										A										LANGUAGES English, Spanish and German English, Spanish and Turkish English, Spanish and French English, Spanish and Portuguese English, Turkish and Russian
										A										ADAPTATION -

Example of ordering code:

SIR B	1	1	0	B	0	A	1	0	A	A
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SIR B 110B0A10AA