SIC-A

Redundancy Protocols Gateway (PRP/HSR)

Main characteristics

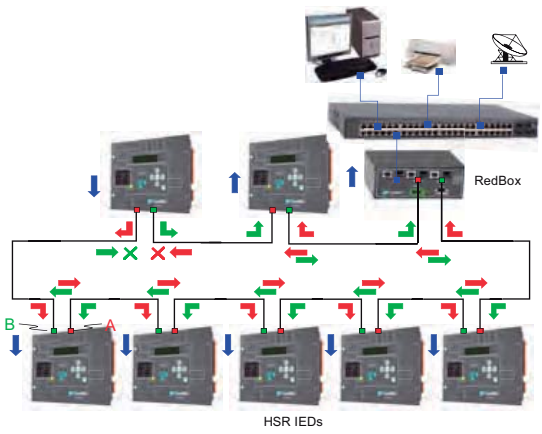
- SIC-A provides any-to-any protocol conversion that permit the integration of equipment with proprietary and legacy protocols in a modern infrastructure with the most recent protocols and redundant topologies.
- SIC-A can work as a multi-protocol conversor, as an unmanaged Redbox or as a redundant protocol gateway.
- SIC-A can manage upto 3000 data points of the most common protocols (Modbus, IEC 60870, DLMS, DNP3,…) or upto 800 data points of advanced protocols as IEC 61850.
- The device provides with HSR (High-availability Seamless Redundancy) is one of the chosen redundancy protocols for the substation automation as per the IEC 61850 standard. This redundancy is the evolution of the existing Parallel Redundancy Protocol (PRP).
- It is especially suited for applications that demand high availability and very short switch over time because it provides zero recovery time in case of the failure of any component. A good example of application may be the protection of automatized electrical substations or the control of synchronized drives, for instance.

Main applications

- **Redbox**

SIC-A Working as a Redbox allows the connection of HSR networks with traditional ones.

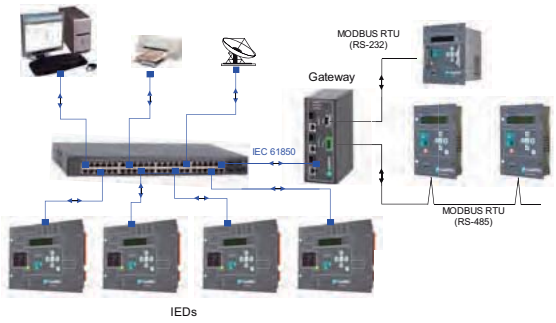
In case of PRP redundancy, SIC-A is not denominated Redbox, it would be a device that allows the integration into 2 independent networks through a 3rd Ethernet port.



Redbox

• **Protocol Gateway**

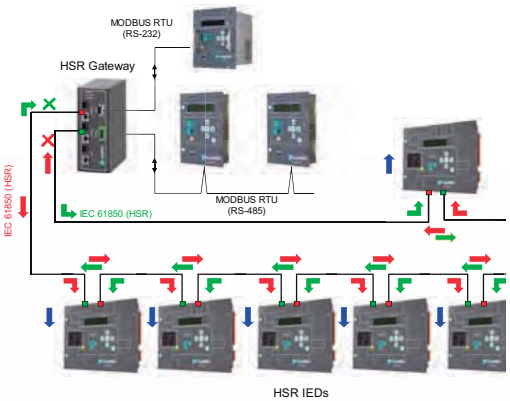
SIC-A device is able of communicating through serial communication RS-232 or RS-485 with multiple equipment with a Master serial protocol (Modbus, IEC69870-5-101, IEC60870-5-103, DLMS…) and dispose the information into an Ethernet protocol as IEC 61850 or IEC 60870-5-104. This way, devices with conventional protocols can be integrated in Ethernet networks with advanced protocols.



Protocol Gateway

• **Redundant Protocol Gateway**

It is the result of the combination of the functionality of a Gateway and the HSR redundancy. With this configuration, SIC-A allows the integration of equipment with serial communications in a HSR redundant network with an advanced protocol as IEC 61850 or IEC 60870-5-104.



Redundant Protocol Gateway

• **Most complete topology**

2 SIC-A in their topology of Redbox allow connecting a HSR redundant network with another PRP network.

This is a useful application that permits to coexist new networks with existing ones.

In the same way, SIC-A in its topology of PRP Gateway, would allow to integrate serial equipment with conventional protocols in a PRP network with an advanced Ethernet protocol as IEC61850, IEC 60870-5-104, etc.

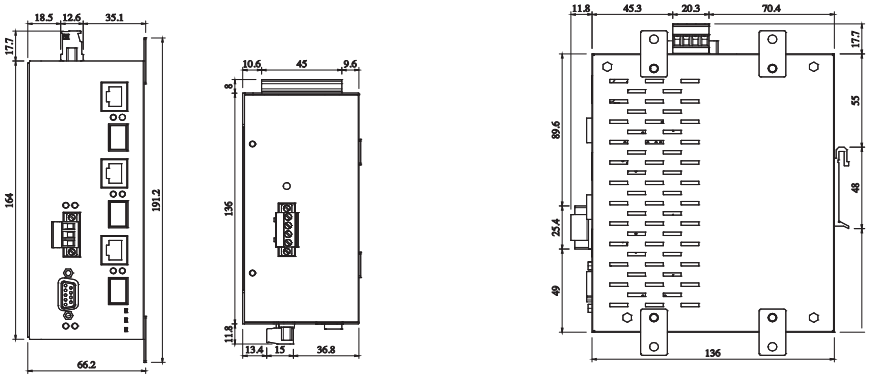
Technical specifications

Item	Unit	Value
Purpose of device	-	Protocol Gateway – Redbox – Protocol Redundant Gateway
Assembly (mounting) type	-	Mounted on standard 35 mm DIN bar and Wall mounting
Protection degree	-	IP20
Operating temperature range	°C	-40 to +85
Consumption	W	6 maximum
Auxiliary Power	Vdc/Vac	24*-110 / 48-230 ±20%
Weight	Kg	1
Diameter of adapters on terminals	mm2	0.5-2.5

Main specifications	
Management	Easy Connect Configuration utility
System Protocols	TCP/IP, UDP/IP, SMTP, POP, HTTP, FTP, SNMP, ICMP, DHCP, BOOTP, Telnet, DNS, ARP, PPPoE, DDNS
Device Security	NERC/CIP Compliant, SSHv2
Communication Security	SSL based VPN tunnel using Blowfish/AES/3DES
Logic Programming	AND/OR/NOT/Bit SHIFT/Split/Index support for digital and analog data, Delay operations
Network Management	SNMP Agent
Protocol Support	IEC 60870-5-101/103/104, DNP3 serial/TCP, Modbus RTU/ASCII/TCP, IEC 62056-DLMS, IEC 61850, IEC 61400
Supported Data Point	IEC 61850: 800
	DNP3, IEC 60870, Modbus and other proprietary protocols: 3000
Devices Supported	20 (10 over serial RS-485 recommended)
Serial interfaces	1 or 2 RS-485 - Terminals and/or 1 or 2 RS-232- DB9 *
Ethernet interfaces	1 RJ45 or 1 LC SFP 100Base-FX 1300nm *
HSR/PRP interfaces**	2 RJ45 or 2 LC SFP 100Base-FX 1300nm *
Time Synchronization	NTC/SNTP/MEA, Protocol Specific (IEC 104,/DNP3, etc.) RTC on-board
Redundancy**	Unmanaged. Compliant implementation of both PRP (IEC 62439-3-4) and HSR (IEC 62439-3-5).

* Model dependent
** Redundant functionality and redundant ports will be disabled if SIC-A2 model is selected

Dimensions and cutout pattern SIC-A



SIC-A	Redundancy Protocols Gateway (PRP/HSR)									Advanced protocol Gateway with redundancy
										FUNCTION
	1									Redbox
	2									Protocol Gateway
	3									Redundant Protocol Gateway
										POWER SUPPLY
		C								24*-110 / 48-230 Vdc-Vac ±20%
										ETHERNET PORT
			0							RJ45
			1							RJ45 + SFP LC Connector
										REDUNDANCY PORT
				0						RJ45
				1						RJ45 + SFP LC Connector
										SERIAL PORTS
					B					RS232 (DB9) + RS-485 (Terminal)
										REDUNDANCY TYPE
						0				None
						1				HSR
						2				PRP
										MASTER / CLIENT PROTOCOL
							A			None
							B			Modbus RTU
							C			IEC 60870-5-103
							D			DNP3.0 Serial
							E			IEC 60870-5-101
							F			DLMS/COSEM
							G			IEC 61850
							H			IEC 60870-5-104
							2			2 Protocols
										SLAVE/SERVER PROTOCOL
								A		None
								B		IEC 61850
								C		DNP3.0 TCP/IP
								D		IEC 60870-5-104
								E		MODBUS TCP/IP
								F		IEC 60870-5-101
								2		2 Protocols
										ADAPTATION
									A	-

* SIC-A Gateway using optical fiber will require a minimum voltage supply of 48 Vdc for its correct working.

SIC A	2	C	0	0	B	0	B	C	A	*SIC A 2 C 0 0 B 0 B C A*