



# SenzaGate SG130/SG131

## **Wireless Communication Gateways**

The SenzaGate families provide protocol translation and connectivity between the SenzaNET network and backend systems. The SG131 is a compact gateway with interfaces for the most widely used serial and industrial fieldbuses built in. The SenzaGate SG130 provides simple, inexpensive serial connectivity to a host.

SenzaGate devices provide time synchronization, routing and scheduling services to each associated SenzaBlock node. All data and commands are buffered locally. For configuration and management, the SG130 and SG131 provide dedicated (out-of-band) maintenance ports, allowing users to restrict fieldbus communications to the exchange of actual data.







Product Family Gateways	SG130	SG131
Dimensions <sup>1</sup>	72 x 114 x 33 mm	155 x 105 x 40 mm
	(2.8 x 4.5 x 1.3")	(6.1 x 4.1 x 1.6")
Weight	140 grams (4.5 oz)	340 grams (10.9 oz)
Buffer Capacity	16 kByte	512 kByte
Maintenance Port	USB or RS232	USB or RS32 (optional)
RS485	-	Optional
Ethernet	-	Standard
Profibus	-	Optional
Modbus	-	Optional
CAN	-	Optional
GSM/GPRS	-	Optional

<sup>&</sup>lt;sup>1</sup> Excluding antenna

- Wide choice of connectivity with Profibus, Modbus, CAN, Ethernet and serial ports; cellular option for deployment in locations where no wired backhaul is available
- Manageable via SenzaWMS software or AT commands
- True mesh networking support for up to 255 SenzaBlock nodes per SenzaGate

## **Specifications**

General		Wireless	
Power source	12 - 24 VDC	Radio type	IEEE 802.15.4 compliant
Current draw	120 mA	Frequency band	2.4 GHz
Network size	Up to 255	Node-to-node hops (max.)	3 <sup>2</sup>
Enclosure rating	IP40	Line of sight range (typical)	250 m (820') node-to-node <sup>3</sup>
Operating temperature range	-20°C to +65°C	In-building range (typical)	70 m (230') node-to-node
Certifications	R/TTE, DIN-EN301489-1, DIN- EN301489-1, CE & FCC authorized for use in Europe & USA	Antenna type	External dipole
Ethernet		Antenna connector	Reverse-SMA
Connector	RJ-45	Receiver sensitivity	-92 dBm
Physical medium	UTP	Output power (max.)	2 dBm
Data rate	10/100 Mbps	Output power (typical)	0 dBm
Protocol	TCP/IP	Serial	
USB		Connector	DB9 female
Connector	USB-B female	Physical medium	RS232, RS485
Physical medium	4-wire	Data rate	Up to 115,200 bps (RS232), up to 1 Mbps (RS485)
Data rate	Up to 480 Mbps	Modbus	
Protocol	USB 2.0 Slave	Connector	RJ-45
Profibus		Physical medium	UTP
Connector	DB9 female	Data rate	10 / 100 Mbps
Physical medium	RS485	Protocol	Modbus-TCP Slave
Data rate	Up to 12 Mbps	CAN	
Protocol	Profibus-DPV1 Slave	Connector	DB9 male
GPRS		Physical medium	RS485
Physical medium	850/900/1,800/1,900 MHz	Data rate	Up to 1 Mbps
Data rate	Up to 114 kbps	Protocol	CAN 2.0
Protocol	TCP/IP		

<sup>&</sup>lt;sup>2</sup> Extendable to up to 5 hops

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 $<sup>^3</sup>$  Extendable to up to 2 km (6,500')





## SenzaGate SG132

#### Wireless I/O Gateways

The SG132 provides an instant cable replacement solution, allowing users to bridge the communication of I/O modules over wireless. Analog or digital sensor data collected by a SenzaBlock adapter is wirelessly transmitted and re-created as output signals by the SG132 or SG132lite for processing by control panels, PLCs or data loggers. In addition, the SG132 comes with the ability to receive analog control signals, and wirelessly relay these signals to a compatible SenzaBlock adapter where they can be re-created as outputs to an actuator.

The mapping between SenzaBlock and SG132 channels is fully configurable through the SG132 USB maintenance port, using the included Windows configuration and management tool. Like all E-Senza gateways, the SG132 also assumes the role of the wireless network manager for all associated SenzaBlock adapters. This includes network health monitoring, battery status monitoring of alarms, and many other advanced capabilities.



SenzaBlock adapters,

For maximum robustness and low latency, the system relies on a time synchronized IEEE 802.15.4 radio with frequency agility. In conjunction with our industrial-grade SenzaNET mesh networking protocol, the SG132 family provides reliable performance even in harsh environments to ensure delivery of critical input and output signals. Multi-hop mesh routing allows the communication range to be flexibly extended, and automatically negotiates a path around obstacles.



Product name	SG132lite	SG132
Number of channels	8	24
Input channels	-	Analog and digital
Output channels	Analog and digital	Analog and digital
Dimensions <sup>1</sup>	70 x 86 x 58 (2.8 x 3.4 x 2.3")	157 x 86 x 59 mm (6.2 x 3.4 x 2.3")
Weight	140 grams (4.5 oz)	340 grams (10.9 oz)
Order code	SG132-L	SG132

<sup>&</sup>lt;sup>1</sup> Excluding antenna

- Maintenance-free, reliable wireless I/O solution for analog and digital signal extension
- Up to 90% installation and commissioning cost savings over traditional cable-based solutions
- Manageable via SenzaWGC software (included)
- Worldwide operation within the license-exempt 2.4 GHz band
- Self-forming, self-healing mesh network for maximum resilience and ease of deployment
- Embedded software provides data logging and reporting, triggers/alarms, battery monitoring and over-the-air configuration of associated SenzaBlock adapters, and many other advanced capabilities

#### **Specifications**

General		Wireless	
Power source	12 - 24 VDC	Radio type	IEEE 802.15.4 compliant
LED indicators	Power, USB, Radio, Error	Frequency band	2.4 GHz
Maintenance port	USB	Node-to-node hops (max.)	3 <sup>2</sup>
Enclosure rating	IP40	Line of sight range (typical)	250 m (820') node-to-node <sup>3</sup>
Installation	DIN rail mounting	In-building range (typical)	70 m (230') node-to-node
Operating temperature range	-20°C to +65°C	Antenna type	External dipole
Certifications	R/TTE, DIN-EN301489-1, DIN- EN301489-1, CE authorized for use in Europe	Antenna connector	Reverse-SMA
Digital Input		Receiver sensitivity	-92 dBm
Signal voltage (low)	0 - 1.2 VDC	Output power (max.)	2 dBm
Signal voltage (high)	2.4 - 60 VDC	Output power (typical)	0 dBm
Input current (max.)	50 mA	Digital Output	
Input resistance	>1 MΩ	Signal voltage (low)	<0.2 V
Analog Input		Signal voltage (high)	>Vcc-0.2 V to 60 V
Signal types	0-20 mA, 4-20 mA, 0-2 V, 0-10 V	Load	Resistive
Input resistance 0-20 mA	<100 Ω at 20 mA	Switching frequency (max.)	Heartbeat
Input resistance 0-10 V	>12.5 MΩ	Output current (max.)	500 mA
ADC linearity	± 2%		
Integration time	ca. 5 ms		
Settling time	<10 μs	]	
Conversion time	7.5 µs	]	

<sup>&</sup>lt;sup>2</sup> Extendable to up to 5 hops

## **Complementary E-Senza Products and Accessories**

The SG132 is fully compatible with SenzaBlock SB110-AI, SB110-AO, SB110-IO adapters. The SG132lite model is compatible with SenzaBlock SB110-AI and SB110-IO (input only) adapters.

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E-Senza Technologies GmbH Max-Stromeyer Straße 116 · D-78467 Konstanz · Germany T +49 7531 36599-10 · F +49 7531 36599-29 info@e-senza.de · www.e-senza.com

<sup>&</sup>lt;sup>3</sup> Extendable to up to 2 km (6,500')





## SenzaGate SG151

### **Gateway with Integrated Monitoring Software**

SG151 is the next generation SenzaGate featuring standard network and sensor management capabilities. It also offers integrated network monitoring software and data storage.

SG151 is a true plug & play product and very easy to use, there is no software installation and simple IT network configuration. After plugging the gateway into the Ethernet network the user simply opens a browser to log into the SenzaGate and gain immediate access to the SenzaWMS web server.

SG151 takes care of network management tasks for the connected SenzaBlocks like time synchronization, routing, scheduling services as well as alarm notification via SMS, E-Mail or Windows event log and manages the whole SenzaNET network onboard.

An onboard single board computer offers 512 MByte database storage capabilities and an extendable component driven software architecture lets you extend functionality & capabilities of this Gateway to a wide variety of applications.





Integrating and using the SG151 with SaaS based platforms is made very easy! A simple HTTP Post mechanism allows plugging into the cloud computing networks and start delivering data into the Software Framework in matter of minutes, and without need of any Firewall security settings!

Product ID	SG151
Dimensions <sup>1</sup>	174 x 197 x 50 (6.9 x 7.8 x 2.0")
Weight	560 grams (17.9 oz)
Buffer Capacity	512 MByte
Maintenance Port	Ethernet
Ethernet	Standard
GSM/GPRS	Optional
Wi-Fi	Optional
Integrated WMS	Yes
Order Code	SG151-DW

#### **Application Areas**

- Data Center Monitoring
- Smart Homes
- Smart Grid/Metering
- Cold Chain & Warehouse Monitoring
- Quick-serve Restaurants
  Monitoring
- FDA/HACCP Compliance
- Plant Monitoring
- Clean Room Monitoring
- Environmental Monitroing
- Irrigation
  - Wind Turbines Monitoring

<sup>&</sup>lt;sup>1</sup> Excluding antenna

- Integrated Single Board Computer running Linux OS & preinstalled SenzaWMS software suite (Enterprise version)
- Integrated SenzaWMS software suite enables centralized configuration, calibration, linearization, localization and monitoring of all devices
- Software upgrade feature
- Easy installation, no external software necessary
- Large storage capacity of 512MByte
- Certified for use Worldwide license-free 2.4 GHz band
- Manages up to 32 SenzaBlocks

General		Wireless	
Power source	12 VDC	Radio type	IEEE 802.15.4 compliant
Current draw	120 mA	Frequency band	2.4 GHz
Network size	Up to 32	Node-to-node hops (max.)	3 <sup>2</sup>
Enclosure rating	IP40	Line of sight range (typical)	250 m (750') node-to-node <sup>3</sup>
Operating temperature range	-20°C to +65°C	In-building range (typical)	70 m (200') node-to-node
Certifications	R/TTE, DIN-EN301489-1, DIN- EN301489-1, CE & FCC authorized for use in Europe & USA	Antenna type	External dipole
Ethernet		Antenna connector	Reverse-SMA
Connector	RJ-45	Receiver sensitivity	-92 dBm
Physical medium	UTP	Output power (max.)	2 dBm
Data rate	10/100 Mbps	Output power (typical)	0 dBm
Protocol	TCP/IP		
Wi Fi			
Connector	RJ-45		
Physical medium	UTP		
Data rate	10/100 Mbps		
Software Interfaces			
TCP/IP Socket ODBC HTTP Post			

## **Complementary E-Senza Products and Accessories**

The SG151 is fully compatible with all SenzaBlock adapters and sensors.

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E-Senza Technologies GmbH Buecklestrasse 82b · D-78467 Konstanz · Germany T +49.7531.36599-10 · F +49.7531.36599-29 info@e-senza.de · www.e-senza.com



<sup>&</sup>lt;sup>2</sup> Extendable to up to 5 hops

<sup>&</sup>lt;sup>3</sup> Extendable to up to 2 km (6,500')



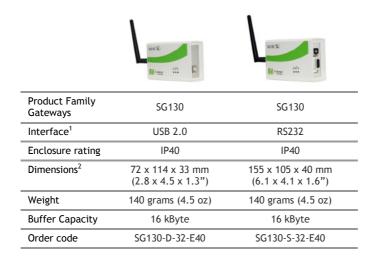


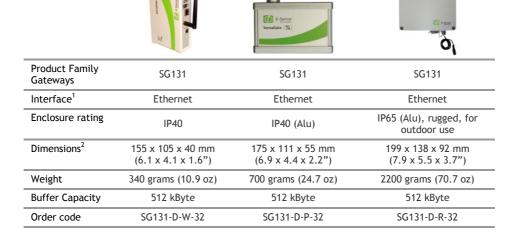
## SenzaGate SG130/SG131

## **Wireless Communication Gateways**

The SenzaGate families provide protocol translation and connectivity between the SenzaNET network and backend systems. The SG131 is a compact gateway with interfaces for the most widely used serial and industrial fieldbuses built in. The SenzaGate SG130 provides simple, inexpensive serial connectivity to a host.

SenzaGate devices provide time synchronization, routing and scheduling services to each associated SenzaBlock node. All data and commands are buffered locally. For configuration and management, the SG130 and SG131 provide dedicated (out-of-band) maintenance ports, allowing users to restrict fieldbus communications to the exchange of actual data.





<sup>&</sup>lt;sup>1</sup>Other interfaces on request (RS232, RS485, CAN 2.0)

Data Sheet SenzaGate

<sup>&</sup>lt;sup>2</sup> Excluding antenna







Product Family Gateways	SG131	SG131	SG131
Interface <sup>1</sup>	Profibus	Profibus	Profibus
Enclosure rating	IP40	IP40 (Alu)	IP65 (Alu) ), rugged, for outdoor use
Dimensions <sup>2</sup>	155 x 105 x 40 mm (6.1 x 4.1 x 1.6")	175 x 111 x 55 mm (6.9 x 4.4 x 2.2")	199 x 138 x 92 mm (7.9 x 5.5 x 3.7")
Weight	340 grams (10.9 oz)	700 grams (24.7 oz)	2200 grams (70.7 oz)
Buffer Capacity	512 kByte	512 kByte	512 kByte
Order code	SG131-PB-W-32	SG131-PB-P-32	SG131-PB-R-32







			-
Product Family Gateways	SG131	SG131	SG131
Interface <sup>1</sup>	Modbus/TCP	Modbus/TCP	Modbus/TCP
Enclosure rating	IP40	IP40 (Alu)	IP65 (Alu) ), rugged, for outdoor use
Dimensions <sup>2</sup>	72 x 114 x 33 mm (2.8 x 4.5 x 1.3")	175 x 111 x 55 mm (6.9 x 4.4 x 2.2")	199 x 138 x 92 mm (7.9 x 5.5 x 3.7")
Weight	140 grams (4.5 oz)	700 grams (24.7 oz)	2200 grams (70.7 oz)
Buffer Capacity	512 kByte	512 kByte	512 kByte
Order code	SG131-MT-W-32	SG131-MT-P-32	SG131-MT-R-32







		With the second	•
Product Family Gateways	SG131	SG131	SG131
Interface <sup>1</sup>	GPRS	GPRS	GPRS
Enclosure rating	IP40	IP40 (Alu)	IP65 (Alu) ), rugged, for outdoor use
Dimensions <sup>2</sup>	155 x 105 x 40 mm (6.1 x 4.1 x 1.6")	175 x 111x 55 mm (6.9 x 4.4 x 2.2")	199 x 138 x 92 mm (7.9 x 5.5 x 3.7")
Weight	340 grams (10.9 oz)	700 grams (24.7 oz)	2200 grams (70.7 oz)
Buffer Capacity	512 kByte	512 kByte	512 kByte
Order code	SG131-G-W-32	SG131-G-P-32	SG131-G-R-32

 $<sup>^{\</sup>rm 1}$  Other interfaces on request (RS232, RS485, CAN 2.0)  $^{\rm 2}$  Excluding antenna

- Wide choice of connectivity with Profibus, Modbus, CAN, Ethernet and serial ports; cellular option for deployment in locations where no wired backhaul is available
- Manageable via SenzaWMS software or AT commands
- True mesh networking support for up to 64 (extendible up to 255) SenzaBlock nodes per SenzaGate

## **Specifications**

_ <u>•</u>			
General		Wireless	
Power source	7 - 30 VDC	Radio type	IEEE 802.15.4 compliant
Current draw	120 mA	Frequency band	2.4 GHz
Network size	Up to 64	Node-to-node hops (max.)	3
Operating temperature range	-20°C to +65°C	Line of sight range (typical)	250 m (820') node-to-node
Certifications <b>F</b> C	R&TTE 1995/5/EC, EN300 440-2 V1.1.2, ETSI EN301 489-03 V1.4.1, EN60950-1:2001 + A11:2006, EN50371:2002, CE, FCC Title 47 Part 15 authorized for use in Europe & USA	In-building range (typical)	70 m (230') node-to-node
Ethernet		Antenna type³	External dipole
Connector	RJ-45	Antenna connector <sup>3</sup>	Reverse-SMA
Physical medium	UTP	Receiver sensitivity	-92 dBm
Data rate	10/100 Mbps	Output power (max.)	2 dBm
Protocol	TCP/IP	Output power (typical)	0 dBm
USB		Serial	
Connector	USB-B female	Connector	DB9 female
Physical medium	4-wire	Physical medium	RS232, RS485
Data rate	Up to 480 Mbps	Data rate	Up to 115,200 bps (RS232), up to 1 Mbps (RS485)
Protocol	USB 2.0 Slave	Modbus	
Profibus		Connector	RJ-45
Connector	DB9 female	Physical medium	Ethernet
Physical medium	RS485	Data rate	10 / 100 Mbps
Data rate	Up to 12 Mbps	Protocol	Modbus-TCP Slave
Protocol	Profibus-DPV1 Slave		
GPRS			
Physical medium	850/900/1800/1900 MHz	]	
Data rate	Up to 114 kbps		
Protocol	TCP/IP	1	
		•	

 $<sup>^{\</sup>rm 3}$  Using IP40 & IP65 (Alu) enclosure, antenna is not exchangeable

# Release Q1 2011

## **Complementary E-Senza Products and Accessories**

SG130 & SG131 are fully compatible with all SenzaBlock adapters and sensors.

Accessory	Order Code	Accessory	Order Code
Antenna extension cable, 1 m (3')	ACC-RC-S-100	External power adapter	ACC-PS-SG
Antenna extension cable, 3 m (10')	ACC-RC-S-300		
2 dB dipole antenna, IP54	ACC-AT-S-54		
2 dB dipole antenna, IP65	ACC-AT-S-65		
5 dBi dipole antenna, IP54	ACC-AT-H-54		
9 dBi dipole antenna, IP54	ACC-AT-H9-54		
2dB dipole antenna, IP65, rugged version	ACC-AT-R-65		
2-way Antenna Splitter	ACC-AT-SP		

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E-Senza Technologies GmbH Max-Stromeyer-Straße 116 · D-78467 Konstanz · Germany T +49.7531.36599-10 · F +49.7531.36599-29 info@e-senza.de · www.e-senza.de

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# SenzaGate SG132

## Wireless I/O Gateways

The SG132 provides an instant cable replacement solution, allowing users to bridge the communication of I/O modules and several temperature/humidity sensors over wireless. Analog or digital sensor data as well as temperature/humidity measurements collected by a SenzaBlock adapter or sensor are wirelessly transmitted and re-created as output signals by the SG132lite for processing by control panels, PLCs or data loggers.



Like all E-Senza gateways, the SG132lite also assumes the role of the wireless network manager for all associated SenzaBlocks. This includes network health monitoring, battery status monitoring of SenzaBlocks, alarms, and many other advanced capabilities.

For maximum robustness and low latency, the system relies on a time synchronized IEEE 802.15.4 radio with frequency agility. In conjunction with our industrial-grade SenzaNET mesh networking protocol, the SG132lite provides reliable performance even in harsh environments to ensure delivery of critical input and output signals. Multi-hop mesh routing allows the communication range to be flexibly extended, and automatically negotiates a path around obstacles.



Product name	SG132lite	
Number of channels	8	
Input channels	-	
Output channels	Analog and digital	
Dimensions <sup>1</sup>	70 x 86 x 58 (2.8 x 3.4 x 2.3")	
Weight	140 grams (4.5 oz)	
Order code	SG132-L	

<sup>&</sup>lt;sup>1</sup> Excluding antenna

- Maintenance-free, reliable wireless I/O solution for analog and digital signal extension
- Up to 90% installation and commissioning cost savings over traditional cable-based solutions
- Manageable via SenzaWGC software (included)
- Worldwide operation within the license-exempt 2.4 GHz band
- Self-forming, self-healing mesh network for maximum resilience and ease of deployment
- Embedded software provides data logging and reporting, triggers/alarms, battery monitoring and over-the-air configuration of associated SenzaBlocks, and many other advanced capabilities

## **Specifications**

General		Wireless	
Power source	12 - 24 VDC	Radio type	IEEE 802.15.4 compliant
LED indicators	Power, USB, Radio, Error	Frequency band	2.4 GHz
Maintenance port	USB	Node-to-node hops (max.)	3
Enclosure rating	IP40	Line of sight range (typical)	250 m (820') node-to-node
Installation	DIN rail mounting	In-building range (typical)	70 m (230') node-to-node
Operating temperature range	-20°C to +65°C	Antenna type	External dipole
Certifications <b>FC</b>	R&TTE 1995/5/EC, EN300 440-2 V1.1.2, ETSI EN301 489-03 V1.4.1, EN60950-1:2001 + A11:2006, EN50371:2002, CE, FCC Title 47 Part 15 authorized for use in Europe & USA	Antenna connector	Reverse-SMA
Analog Output		Receiver sensitivity	-92 dBm
Interfaces	0-20 mA or 4-20 mA or 0-2 V or 0-10 V	Output power (max.)	2 dBm
DAC linearity	± 2%	Output power (typical)	0 dBm
DAC resolution	12 Bit		
Integration time	ca. 5 ms	Digital Output	
Settling time	<10 μs	Signal voltage (low)	<0.2 V
Conversion time	7.5 µs	Signal voltage (high)	>Vcc-0.2 V to 60 V
		Load	Resistive
		Switching frequency (max.)	Heartbeat
		Output current (max.)	500 mA
		Supported SenzaBlocks	
		SB110-NTC, SB110-HT, SB110-T, SB110-AI, SB110-IO	

# Release Q1 2011

## **Complementary E-Senza Products and Accessories**

The SG132lite model is compatible with SenzaBlock SB110-AI and SB110-IO (input only) adapters as well as SB110-NTC, SB110-HT and SB110-T sensors.

Accessory	Order Code	Accessory	Order Code
Antenna extension cable, 1 m (3')	ACC-RC-S-100	External power adapter	ACC-PS-SG
Antenna extension cable, 3 m (10')	ACC-RC-S-300		
2 dB dipole antenna, IP54	ACC-AT-S-54		
2 dB dipole antenna, IP65	ACC-AT-S-65		
5 dBi dipole antenna, IP54	ACC-AT-H-54		
9 dBi dipole antenna, IP54	ACC-AT-H9-54		
2-way Antenna Splitter	ACC-AT-SP		

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E-Senza Technologies GmbH

Max-Stromeyer-Straße 116 · D-78467 Konstanz · Germany
T +49 7531 36599-10 · F +49 7531 36599-29
info@e-senza.de · www.e-senza.com

