

SenNet IoT Gateway Modbus Sigfox

General description

SenNet IoT Gateway Modbus Sigfox is a device designed to read until two modbus values and send them by Sigfox to te cloud.

Use sigfox network to connect with your cloud or platform.

These are the references at depend of bus standard type.

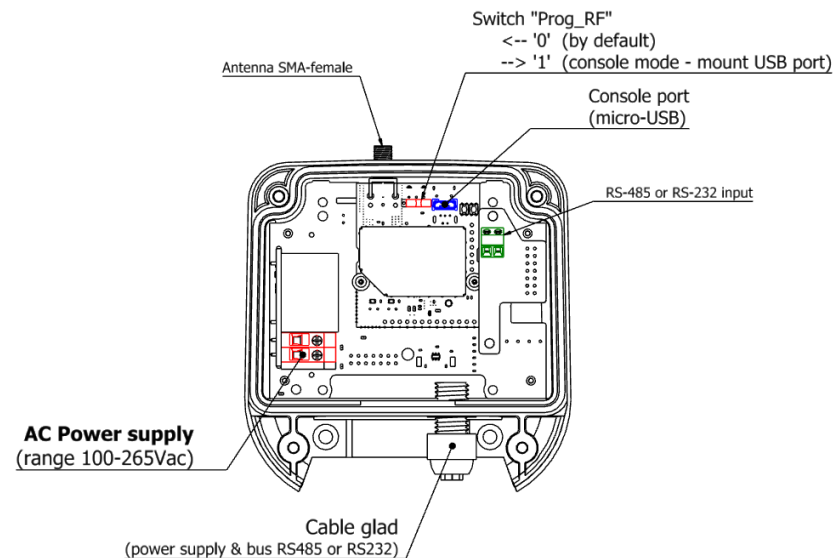
Reference	Power supply type
Gateway Modbus Sigfox RS485	AC Power supply
Gateway Modbus Sigfox RS232	100-265Vac



RS-485

RS-232

Wired & Setup



Setup parameters methods:

- Through downlink message (see downlink message section) , recommend method.
- By cable micro-USB with PC console enter menu to set these parameters.

Basic steps to intall:

1. Set Slave Modbus Identifier.
2. Set Address / Function / Format type of data (Value 1)
3. Set Address / Function / Format type of data (Value 2)
4. Set interval to send (**by default 15 minutes**).
5. Take note ID / PAC to sign the device on Sigfox Cloud.

Define value to read from Modbus Slave

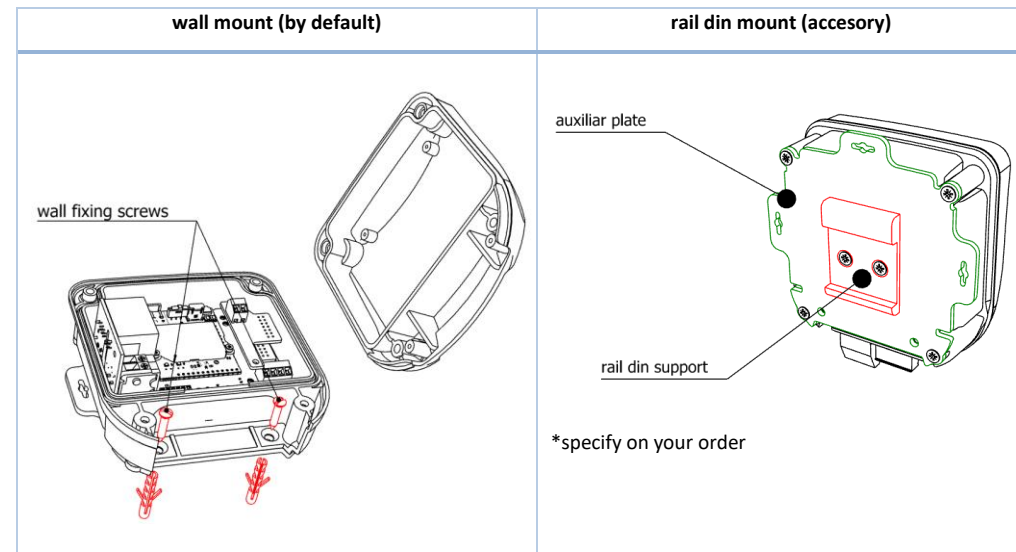
To setup this values is necessary set:

- ID modbus of Slave Device
- Starter address register of each value
- Function type (by default function type 3: Read Holding Registers)
- Format type of value:
 1. signed int (1 register – 2 bytes)
 2. unsigned int (1 register – 2 bytes)
 3. long int (2 register – 4 bytes)
 4. long int inverse (2 register – 4 bytes)
 5. float (2 register – 4 bytes)
 6. float inverse (2 register – 4 bytes)
 7. double (4 register – 8 bytes)
 8. double inverse (4 register – 8 bytes)

Holding case

IP Grade	IP-65
Temperature details	
Working temperature	-20°C...+70°C
Store temperature	-20°C...+75°C
Holding	
Dimensions	119 x 111 x 53 mm
Type mount	Wall or din rail
Plastic Material	ABS – V0

*If you need an upper grade contact with out support team.



Uplink Message

SenNet IoT Gateway Modbus Sigfox is an versatility device capable to read two values of any modbus Slave device, and send to cloud, embeded on sigfox message.

	Type Message (define format of each value, at depend of original modbus map)			
Number of bytes per Value	Value 1		Value 2	
2 bytes	signed int	00b	signed int	00b
	unsigned int	01b	unsigned int	01b
4 bytes	long	10b	long	10b
	float	11b	float	11b

Table 1

A common point in all types of messages is the head (defined with 2 bytes) that includes important information embedded in the message (type device/type message/errors.. etc). In the next table are defined the mean of these info-fields.

Field Info																												
Byte		Byte 1							Byte 2																			
<u>Type Device</u> 01 - Easy Meter 02 – Pulse Counter 03 – Not defined 04 – Enviroment Sensor 05 – Not Defined 06 – GW Modbus 07 – Not defined		<u>Type Message</u>					Issue to get values by Modbus		Internal Use		Downlink error or Reset by WDT		<u>Type Remote Nodes</u>			<u>ID Remote Nodes</u> No Remote = 000 Remote ID = 001 _b = 01 _d = 010 _b = 02 _d = 011 _b = 03 _d = 100 _b = 04 _d = 101 _b = 05 _d = 110 _b = 06 _d (6 nodes maximum) Type Message 0 (Debug) = 111 _b = 07 _d												
																			See -Table 1-									
		Value 1	Value 2	00b		00b							01b		01b				10b		10b		11b		11b			
		Feedback Error																										
		0		7		6							5		4				3		2		1		0			
		Bit		7		6							5		4				3		2		1		0			
				Byte1 Bit 7-6-5		Byte1 Bit 4-3-2-1							Byte1 Bit 0		Byte2 Bit 7-6				Byte2 Bit 5-4-3		Byte2 Bit 2-1-0							

Table 2

Uplink Message : Value 1 + Value 2				
Field	Field Info		Value 1	Value 2
Type data	See Table 2		2 or 4 bytes at depend of format type choosen	2 or 4 bytes at depend of format type choosen
Byte	1	2	(see table 1)	(see table 1)

Downlink Message

It's possible set parameters of device without interacting with it locally. That method is optional but it's not necessary, because you can set these values through micro-USB console port.

Is it possible to use two types of downlink message, at depend which parameters would like to change.

Downlink Message 1

With this message is possible set, ID modbus of slave device, address, function, format type of any of the two values that it's possible to read.

Byte	1		2	3 – 4	5 – 6	7	8
Field	Setup byte (1byte)		Identificat or Modbus (1 byte)	Modbus Address Value 1 (2 bytes)	Modbus Address Value 2 (2 bytes)	Modbus Function Value1 / Value 2	Modbus Format type Value1 / Value 2
Value	Bit 7	1 (by default)	[0x00h, 0xFFh] or [0,255]	[0x0000h, 0xFFFFh] or [0,65536]	[0x0000h, 0xFFFFh] or [0,65536]	<i>See table 3</i>	<i>See table 4</i>
	Bit 6	1/0 enable/disable set ID Modbus					
	Bit 5	1/0 enable/disable set Address Value 1					
	Bit 4	1/0 enable/disable set Address Value 2					
	Bit 3	1/0 enable/disable set Modbus Function (Value 1 & Value 2)					
	Bit 2	1/0 enable/disable set Format type fo data (Value 1 & Value 2)					
	Bit 1	1/0 enable/disable Debug 1 (versión HW/FW)					
	Bit 0	1/0 enable/disable Debug 2 (Internals errors)					

Byte 7 (Downlink Message 1) Set Modbus Function							
Value 1				Value 2			
Function 01				Function 01			
0	0	0	1	0	0	0	1
Function 02				Function 02			
0	0	1	0	0	0	1	0
Function 03				Function 03			
0	0	1	1	0	0	1	1
Function 04				Function 04			
0	1	0	0	0	1	0	0
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

Table 3

Byte 8 (Downlink Message 1) Set Modbus format type							
Value 1				Value 2			
signed int				signed int			
0	0	0	0	0	0	0	0
unsigned int				unsigned int			
0	0	0	1	0	0	0	1
long int				long int			
0	0	1	0	0	0	1	0
long int inverse				long int inverse			
0	0	1	1	0	0	1	1
float				float			
0	1	0	0	0	1	0	0
float inverse				float inverse			
0	1	0	1	0	1	0	1
double				double			
0	1	1	0	0	1	1	0
double inverse				double inverse			
0	1	1	1	0	1	1	1
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

Table 4

Downlink Message 2

With this message is possible set on time the device and define interval to send to cloud.

Byte	1		2 - 5	6	7	8
Field	Setup byte (1byte)		Set time (4bytes)	Interval to send (minutes)	Not used (1 byte)	Not used (1 byte)
Value	Bit 7	0 (by default)	{Time-Epox}	[11...59]	-	-
	Bit 6	1/0 enable/disable set Time				
	Bit 5	1/0 enable/disable set Interval to send				
	Bit 4	0 (by default)				
	Bit 3	0 (by default)				
	Bit 2	0 (by default)				
	Bit 1	1/0 enable/disable Debug 1 (versión HW/FW)				
	Bit 0	1/0 enable/disable Debug 2 (Internals errors)				

Type 0 : Debug 1 (9 bytes)

Field	Field Info		HW device	Version FW	Revision FW	Not used
Type data	See Table 2					-
Byte	1	2	3	4	5	6-9

Type 0 : Debug 2 (12 bytes)

Type 0 : Debug 2 (12 bytes)												
Field	Field Info		Reset event	Issue get modbus register		Number retries	Type Modbus function (Value 1 & Value 2)		Format type Value 1	Format type Value 2	Address Modbus Value1	Address Modbus Value2
Type data	See Table 2		-	Bit 7	-	-	Bit 7	Function modbus Value 2	Format type Value 1 (Table 5)	Format type Value 2 (Table 5)	[0x0000h, 0xFFFFh]	[0x0000h, 0xFFFFh]
				Bit 6	-		Bit 6					
				Bit 5	-		Bit 5					
				Bit 4	-		Bit 4	Function modbus Value 1				
				Bit 3	Wrong Length Value 2		Bit 3					
				Bit 2	CRC Value 2		Bit 2					
				Bit 1	Wrong Length Value 1		Bit 1					
				Bit 0	CRC Value 1		Bit 0					
Byte	1	2	3	4	5	6	7	8	9-10	11-12		

value	type format	Register modbus / number of bytes
0	signed int	1 register / 2 bytes
1	unsigned int	1 register / 2 bytes
2	long int	2 register / 4 bytes
3	long int inverse	2 register / 4 bytes
4	float	2 register / 4 bytes
5	float inverse	2 register / 4 bytes
6	double	4 register / 8 bytes
7	double inverse	4 register / 8 bytes

Table 5

Warranty

Satel Spain guarantees its products against all manufacturing defects for a period of 1 year.



No return of material will be accepted, nor will any equipment be repaired if it is not accompanied by a report (RMA) indicating the defect observed or the reasons for the return.

The warranty will be void if the equipment has suffered "misuse" or the storage, installation or maintenance instructions in this manual have not been followed. "Misuse" is defined as any use or storage situation contrary to the National Electrical Code or that exceeds the limits indicated in this manual.

Satel Spain declines all responsibility for possible damage to the equipment or to other parts of the installations and will not cover possible penalties derived from a possible breakdown, poor installation or "misuse" of the equipment. Consequently, the guarantee is not applicable to breakdowns produced in the following cases.

- Due to overvoltage and/or electrical disturbances in the supply.
- By water, if the product does not have the appropriate IP rating.
- For exposing the equipment to extreme temperatures, which exceed the operating or storage temperature limit.
- Due to a modification of the product by the client without prior notice to Satel Spain.

Faced with possible errors in this technical sheet, keep it updated in our website.