



User Manual

Wireless Device Server

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Manual Revision	Revision Date	List of Updates
00	23/09/2016	
01	02/08/2017	1. Contact Information

1. Overview

- The Wireless Device Server – GSM enables you to connect Serial Devices to remote server over GSM / GPRS network quickly & easily.
- WDS – GSM simplifies GSM / GPRS Connectivity to devices in Applications where Mobility is required or Cabling is Impractical.
- Available as a Standalone Box Product for External connectivity.
- Can also be used as a simple GSM modem.

2. Technical Specifications

Interface	
Serial	RS 232 or RS 485 / RS 422
Data Rates	600 bps -115200 bps
Connectors	Db9 Male for RS 232, Screw type connectors for RS 485/422
Characters	7 or 8
Parity	Odd, Even & No Parity
Stop Bits	1 or 2
Flow Control	NONE, XON / XOFF (Software) & RTS / CTS (Hardware)
Data Backup	
Memory	2 MB
Network Interface	
Interface	GSM / GPRS
Protocols	TCP / IP
Indicators (LED)	
GSM	Green
CONNECT	Red
Receive Data (RxD)	Green
Transmit Data (TxD)	Yellow
Power	8 to 24 V DC, 500 mA max
Environmental	
Operating	0 °C to 55 °C
Storage	-40 °C to 85 °C
Packaging	
Dimensions (LxWxH)	100 mm(L) x 60 mm(W) x 25 mm(H) for Box Product
Weight	90 g for Box Product
Warranty	12 Months for Box Product

3. Applications

- Access Management in Hospitality Industry
- Attendance reading & access control systems
- Any other Remote Data transfer connectivity requirements
- Building Management Systems
- Bar code readers and printers, Point of sale terminals
- Card Verification Kiosks
- Home Automation & Management
- Instrumentation
- Industrial Control
- Moving Digital Display Board and Video projector remote management
- Patient Monitoring
- Remote Equipment Management
- Remote Energy Measurement
- UPS monitoring and wind mill monitoring
- Vending machine control/monitoring
- Weighing Bridge, vending machine control and monitoring



Figure: Wireless Device Server-GSM used in hospitals for monitoring

4. Installation

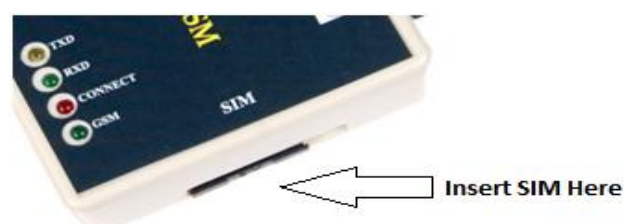
The installation of the Wireless Device Server-GSM doesn't require the installation of any device drivers. It is a simple plug-in and use device.

4.1 Package Contains

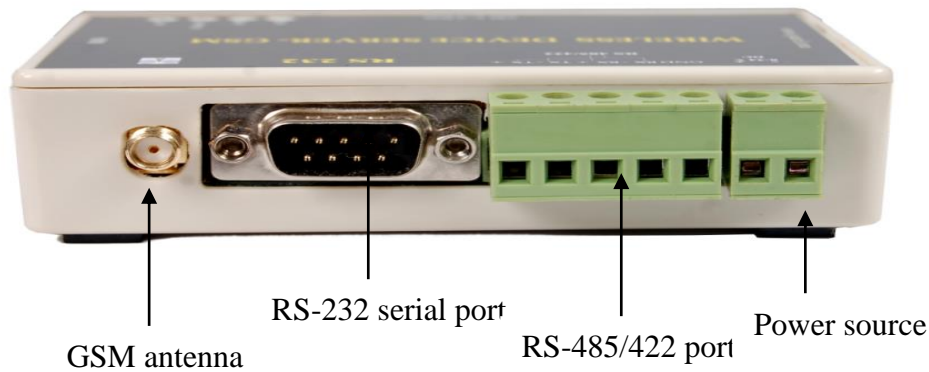
- a. WIRELESS DEVICE SERVER UNIT
- b. 12 V POWER ADAPTER
- c. GSM ANTENNA

4.2 Device Assembly

- The Wireless Server Device-GSM has a slot for a SIM card that can be accessed by pressing the button present on its left side. It pops out the SIM card holder tray, which has a mark on the top right corner indicating the direction in which SIM card has to be inserted.



- The antenna can be connected by simply screwing it onto its marked location.



- The device has to be plugged into any RS-232 or RS-485/422 port.
- The Wireless Device Server-GSM is platform independent, which means that it can be run or used on any Operating System.

4.3 Steps to follow:

- Use any communication programs like Hyper Terminal, XTalk and Mirror to configure EAD01-103 through RS 232 serial interface. The default serial port settings are **9600 baud, 8 bits, no parity, 1 stop bit, no flow control**. Select appropriate communication (COM) port to which the EAD is connected in the software.
- To enter the *Configuration Mode*, power ON the Device. **Press ‘Enter’ Key to proceed with the Configuration.**
- Once the WDS senses the Enter key, the unit sends the following string which will appear onscreen:

Enter configuration password:

Enter the default Password, which is 77277.

The **main configuration menu** will appear, giving options

```

gg - HyperTerminal
File Edit View Call Transfer Help
[Icons]
-----
Entering Configuration Mode
Enter Configure Password:*****
Wireless Device Server Sparr v1.01 1B7E8
a>.Serial Configuration
b>.GPRS Configuration
c>.Server Configuration
d>.Test Mode
e>.Load Factory Default
f>.Change Configuration Password
g>.Save and Exit
h>.Exit
i>.MODBUS Configuration
Enter Selection:_
-----
Connected 0:00:16  Auto detect  9600 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo

```

Under the **main configuration** menu, there are 9 parameters:

- a) Serial Configuration
- b) GPRS Configuration
- c) Server Configuration
- d) Test Mode
- e) Load Factory Default
- f) Change Configuration Password
- g) Save and Exit
- h) Exit
- i) MODBUS Configuration

I. Serial Configuration

Under the **Serial Configuration** menu, there are 5 parameters:

- a) Baud rate
- b) Data Parameters
- c) Flow Control
- d) Serial Interface Mode
- e) Exit

■ Baud Rate:

Under the Serial Configuration menu, on selecting 'a', you can configure the Baud rate. The baud rate is a data transmission rate (bits/second) for modems. You can Set the correct baud rate with option 'a' to 'i' for valid baud rates of 600, 1200, 2400, 4800, **9600 (Default)**, 19200, 38400, 57600 and 115200 bps.

■ Data Parameters:

There are **eight** options available for data parameters settings with choice from 'a' to 'h' for various Data bits, Parity and Stop bit selections.

- a). N81 - N (No Parity), 8 (Data bit), 1(Stop bit) **(default)**
- b). E71 - E (Even Parity), 7(Data bit), 1(Stop bit)
- c). O71 - O (Odd Parity), 7 (Data Bits), 1(Stop Bit)
- d). E81 - E (Even Parity), 8(Data bit), 1(Stop bit)
- e). O81 - O (Odd Parity), 8(Data bit), 1(Stop bit)
- f). N82 - N (No Parity), 8(Data bit), 2 (Stop bit)
- g). E72 - E (Even Parity), 7(Data bit), 2(Stop bits)
- h). O72 - O (Odd Parity), 7(Data bit), 2(Stop bits)

■ Flow Control:

Flow control is required for handshake with the Serial device for stopping serial data input/output to avoid character loss. Supported options are NONE for No Flow control, XON/XOFF for Software Flow control and RTS/CTS for Hardware Flow control. Default None

It is highly recommended to use Flow control for higher Serial speed applications.

■ **Serial Interface Mode:**

In the Serial Configuration menu, on selecting 'd', you can configure the Serial Interface Mode. Here you can choose:

- 1) RS232
- 2) RS485 (2 wire)
- 3) RS422 (4 wire)

■ **Exit**

In the Serial Configuration menu, on selecting 'e', you can exit and go back to the main configuration menu.

II. **GPRS Configuration**

Under the **GPRS Configuration** menu, there are 5 parameters:

- a) APN
- b) User ID
- c) Password
- d) Exit
- e) GSM Always ON(0-Disable, 1-Enable)

■ **APN:**

Under the GPRS Configuration menu, on selecting 'a', you can enter the Access Point Name (APN). Access Point Name (APN) is a configurable network identifier used by a device when connecting to a GSM carrier.

■ **User ID:**

In the GPRS Configuration menu, on selecting 'b', you can enter a User ID for identifying the user.

■ **Password:**

In the GPRS Configuration menu, on selecting 'c', you can enter a Password for security while connecting to your network.

■ **Exit**

In the GPRS Configuration menu, on selecting 'd', you exit and go back to the main configuration menu.

■ **GSM Always ON(0-Disable, 1-Enable)**

In the GPRS Configuration menu, on selecting 'e', you can Enable or Disable GSM Always ON.

III. **Server Configuration**

Under the **Server Configuration** menu, there are 11 parameters:

- a) Remote Host Name/IP
- b) Remote Port
- c) Exit
- d) Connection Inactivity Timeout(in Sec[1-65535]):
- e) Slave-1 File Path (Max-350 Char)

-
- f) Slave-2 File Path (Max-350 Char)
 - g) Slave-3 File Path (Max-350 Char)
 - h) Slave-4 File Path (Max-350 Char)
 - i) Slave-5 File Path (Max-350 Char)
 - j) Slave-6 File Path (Max-350 Char)
 - k) Time and Date Update

■ Remote Host Name/IP

The **IP address (Internet Protocol address)** is a unique number that devices use in order to identify and communicate with each other on a computer network utilizing the Internet Protocol standard (**IP**).

■ Remote Port

In the Server Configuration menu, on selecting 'b', you can configure the Remote Port Number.

■ Connection Inactivity Timeout:

You can retry establishing a connection to the server if no acknowledgement is received within the time allotted. This time should be entered in seconds, and should be between 1 and 65535 sec.

■ Exit

In the Server Configuration menu, on selecting 'e', you exit and go back to the main configuration menu.

■ Slave-(1-6) File Path

In the Server Configuration menu, on selecting e-j options you can set the file path.

Default path:

```
/SPARR/sparrServlet?A1=R1&A2=R2&A3=R3&A4=R4&A5=R5&A6=R6&A7=R7&A8=R8&A9=R9&A10=R10&A11=R11&A12=R12&A13=R13&A14=R14&A15=R15&A16=R16&A17=R17&A18=R18&A19=R19&A20=R20&A21=R21&A22=R22&A23=R23&A24=R24&A25=R25&A26=R26&A27=R27&A28=R28&A29=R29&A30=R30&A31=R31&A32=R32
```

■ Time and Date Update:

Under the Time and Date Update menu, there are 3 parameters:

- a) NTP Server Time
- b) Local Network Time
- c) Exit

■ NTP Server Time

On selecting 'a' NTP Server Time menu, there are 8 parameters:

- a) Enable NTP Server Date and Time Update[0=Disable, 1=Enable]
- b) Time Server IP1
- c) Time Server IP2
- d) Time Server IP3
- e) Time Server Port
- f) Time Zone
- g) Time Update Interval(1-65535minute)
- h) Exit

■ **Local Network Time**

Under the Local Network Time menu, there are 4 parameters:

- a) Enable Local Network Date and Time Update[0=Disable, 1=Enable]
- b) Automatic Update
- c) Manual Update
- d) Exit

■ **Exit**

In the Server Configuration menu, on selecting 'e', you can configure the time and date update, i.e. you can select which IP address will keep the date and time stamp.

IV. **Test Mode**

Under the **Test Mode** menu, there are 4 parameters:

- a) Display Debug Messages 0=Disable 1=Enable
- b) GSM Test
- c) Exit
- d) Configure GSM Test Exit Character

■ **Display Debug Messages:**

Under the Test Mode menu, on selecting 'a', you can configure the device to either display debug messages or not to display debug messages. On selecting 0, display of debug messages is disabled. On selecting 1, display of debug messages is enabled.

■ **GSM Test:**

In this menu upon entering 'b', i.e. to perform the GSM test, then it will display a message as **Initializing GSM Modem...**

■ **Exit**

Selecting 'c', you can exit and go back to the main configuration menu.

■ **Configure GSM Test Exit Character**

Here you can configure GSM Exit Character

V. **Load Factory Defaults**

Use this option to program the factory default values for all the parameters of the WDS.

VI. **Change Configuration Password**

Select this option to change the password required for entering in to Configuration Mode for making any changes to the Settings. **Default password is 77277**. This password is needed for programming through Serial and Telnet. This will take only alphabets [A-Z, a-z], digits [0-9] and will not allow any symbols. It must have minimum 3 characters. It will allow maximum 9 characters.

VII. **Save and Exit**

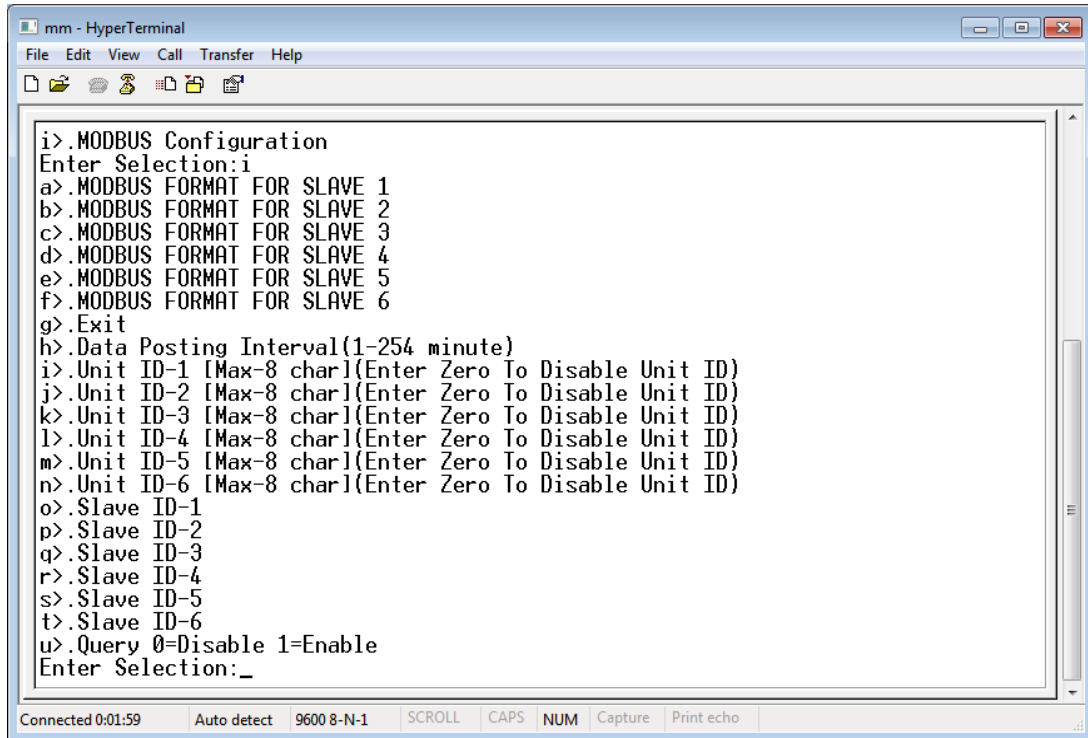
To save the programmed parameters, select this option from the main menu. WDS takes few seconds to save the configured parameters. Once the new values are stored, WDS automatically exit from the configuration (programming) mode.

VIII. Exit

Select this option to exit from the configuration mode without saving the data.

IX. MODBUS Configuration

From the Main Configuration Menu, entering 'i' will take you to the Modbus Configuration Menu



```
mm - HyperTerminal
File Edit View Call Transfer Help
i>.MODBUS Configuration
Enter Selection:i
a>.MODBUS FORMAT FOR SLAVE 1
b>.MODBUS FORMAT FOR SLAVE 2
c>.MODBUS FORMAT FOR SLAVE 3
d>.MODBUS FORMAT FOR SLAVE 4
e>.MODBUS FORMAT FOR SLAVE 5
f>.MODBUS FORMAT FOR SLAVE 6
g>.Exit
h>.Data Posting Interval(1-254 minute)
i>.Unit ID-1 [Max-8 char](Enter Zero To Disable Unit ID)
j>.Unit ID-2 [Max-8 char](Enter Zero To Disable Unit ID)
k>.Unit ID-3 [Max-8 char](Enter Zero To Disable Unit ID)
l>.Unit ID-4 [Max-8 char](Enter Zero To Disable Unit ID)
m>.Unit ID-5 [Max-8 char](Enter Zero To Disable Unit ID)
n>.Unit ID-6 [Max-8 char](Enter Zero To Disable Unit ID)
o>.Slave ID-1
p>.Slave ID-2
q>.Slave ID-3
r>.Slave ID-4
s>.Slave ID-5
t>.Slave ID-6
u>.Query 0=Disable 1=Enable
Enter Selection:_
```

Under the **Modbus Configuration** menu, there are 21 parameters:

- a) MODBUS FORMAT FOR SLAVE 1
- b) MODBUS FORMAT FOR SLAVE 2
- c) MODBUS FORMAT FOR SLAVE 3
- d) MODBUS FORMAT FOR SLAVE 4
- e) MODBUS FORMAT FOR SLAVE 5
- f) MODBUS FORMAT FOR SLAVE 6
- g) Exit
- h) Data Posting Interval(1-254 minute)
- i) Unit ID-1 [Max-8 char](Enter Zero To Disable Unit ID)
- j) Unit ID-2 [Max-8 char](Enter Zero To Disable Unit ID)
- k) Unit ID-3 [Max-8 char](Enter Zero To Disable Unit ID)
- l) Unit ID-4 [Max-8 char](Enter Zero To Disable Unit ID)
- m) Unit ID-5 [Max-8 char](Enter Zero To Disable Unit ID)
- n) Unit ID-6 [Max-8 char](Enter Zero To Disable Unit ID)
- o) Slave ID-1
- p) Slave ID-2
- q) Slave ID-3
- r) Slave ID-4
- s) Slave ID-5
- t) Slave ID-6
- u) Query 0=Disable 1=Enable

■ MODBUS FORMAT FOR SLAVE (1 -6)

The device can communicate up to 6 slaves, with a maximum of 32 registers per slave. Address of each register belonging to each slave can be configured separately.

Under the MODBUS FORMAT SLAVE menu, there are 33 parameters:

Format: Function ID, Register Starting Address, Number of Registers to Read

01>.Type New Format Slave-1 [Existing:3,100,2]
02>.Type New Format Slave-2 [Existing:3,102,2]
03>.Type New Format Slave-3 [Existing:3,104,2]
04>.Type New Format Slave-4 [Existing:3,106,2]
05>.Type New Format Slave-5 [Existing:3,108,2]
06>.Type New Format Slave-6 [Existing:3,110,2]
07>.Type New Format Slave-7 [Existing:3,112,2]
08>.Type New Format Slave-8 [Existing:3,114,2]
09>.Type New Format Slave-9 [Existing:3,116,2]
10>.Type New Format Slave-10 [Existing:3,118,2]
10>.Type New Format Slave-10 [Existing:3,118,2]
11>.Type New Format Slave-11 [Existing:3,120,2]
12>.Type New Format Slave-12 [Existing:3,122,2]
13>.Type New Format Slave-13 [Existing:3,124,2]
14>.Type New Format Slave-14 [Existing:3,126,2]
15>.Type New Format Slave-15 [Existing:3,128,2]
16>.Type New Format Slave-16 [Existing:3,130,2]
17>.Type New Format Slave-17 [Existing:0,0,0]
18>.Type New Format Slave-18 [Existing:0,0,0]
19>.Type New Format Slave-19 [Existing:0,0,0]
20>.Type New Format Slave-20 [Existing:0,0,0]
21>.Type New Format Slave-21 [Existing:0,0,0]
22>.Type New Format Slave-22 [Existing:0,0,0]
23>.Type New Format Slave-23 [Existing:0,0,0]
24>.Type New Format Slave-24 [Existing:0,0,0]
25>.Type New Format Slave-25 [Existing:0,0,0]
26>.Type New Format Slave-26 [Existing:0,0,0]
27>.Type New Format Slave-27 [Existing:0,0,0]
28>.Type New Format Slave-28 [Existing:0,0,0]
29>.Type New Format Slave-29 [Existing:0,0,0]
30>.Type New Format Slave-30 [Existing:0,0,0]
31>.Type New Format Slave-31 [Existing:0,0,0]
32>.Type New Format Slave-32 [Existing:0,0,0]
33>.Exit

■ Exit

On selecting 'g', you can exit and go back to the main configuration menu.

- **Data Posting Interval(1-254 minute)**

Data posting interval is the time between the data to send to the server. To configure Data Posting Interval enter the value between (1-254).Default is 15 minutes.

- **Unit ID-(1-6) [Max-8 char](Enter Zero To Disable Unit ID)**

The **Unit ID** is 8 character alphanumeric codes which uniquely identifies each unit's entity. To configure Unit ID select Unit ID's between 1-6 and maximum 8 characters can be set. In order to disable Unit ID enter 0.

- **Slave ID (1-6)**

Each slave in a network is assigned a unique address from 1 to 254. When the master requests data, the first byte it sends is the Slave address. This way each slave knows after the first byte whether or not to ignore the message. To configure slave ID select Slave ID's between 1-6.

- **Query 0=Disable 1=Enable**

Communication can be either query based or without. If query based communication is chosen, the device queries each configured register of each slave one after the other periodically. If non query based communication is chosen, the device simply listens to the communication and checks for validity. While listening, the communication is considered to be valid only if the slaves and its addresses are configured into the unit. The responses obtained from the slaves are packetized and send to the server. The order of the packet can also be configured.

Data format which is sent to server is as follows.

HTTP Header:

```
Content-Type: application/x-www-form-urlencoded  
Host: 192.64.85.132
```

Data Packet:

A sample packet sent to the server:

```
GET  
/SPARR/sparrServlet?A1=0000&A2=0000&A3=0000&A4=0000&A5=0000&A6=0000&A7=0000&A8  
=0000&A9=0000&A10=0000&A11=0000&A12=0000&A13=0000&A14=0000&A15=0000&A16=0000  
&A17=0042&A18=0000&A19=0000&A20=0000&A21=0000&A22=0000&A23=0000&A24=0042&A2  
5=0000&A26=0000&A27=0000&A28=0000&A29=0042&A30=0000&A31=0000&A32=0042&Date=2  
016-11-26%2014:34:23&Unit_id=29782609& HTTP/1.1
```

5. Default Values

SL No	Parameters	Values
1	Password	77277
2	Baud Rate	9600
3	Data Parameter	8n1
4	Flow Control	None
5	Serial Interface	RS485
6	Connection Inactivity Timeout	300 seconds
7	APN	airtelgprs.com
8	User ID	null
9	Password	null
10	GSM Always ON	0
11	IP address	192.64.85.132
12	Port Number	8080
13	Date and Time	NTP Server Time
14	NTP Server Time	Enable
15	Time Server IP 1	193.079.237.014
16	Time Server IP 2	64.90.182.55
17	Time Server IP 3	216.171.112.36
18	Time Server Port	123
19	GSM test exit character	*
20	Data Posting Interval	15
21	Query	Enable
22	Display Debug Messages	Disable

6. Troubleshooting

Problems	Solutions
1) How to turn on the device?	To turn on the device, make sure that the adapter is plugged into a power source and that the power supply that ranges from 8 to 24 V DC.
2) What to do if the device is not getting connected?	<p>If the device is not getting connected to the network server, the LED that is marked for CONNECT does not glow. If this is the case then do the following:</p> <ul style="list-style-type: none"> a) Check and see if the SIM card has been inserted b) Check and see if the antenna has been connected c) Make sure that the device is in an area that has network coverage <p>If all the above checkpoints are ensured and the device is still not getting connected then switch off and switch on the device and restart it.</p>
3) What are the default passwords that are programmed for the Wireless Device Server-GSM?	As soon as you enter the configuration mode, you have to enter the configuration password, which is by default 77277. This can be changed in the Main Configuration Menu by selecting option 'h'.

7. Frequently Asked Questions

Questions	Answers
1) What are the protocols and standards that the device follows?	The Wireless Device Server-GSM follows the TCP, UDP, ARP, ICMP, MAC, Telnet, HTTP, DNS and DHCP protocols and standards.
2) How to change the configuration password of the device?	The configuration password allows the user to enter the configuration mode of the device. By default factory settings, the password is 77277. This password can be changed by selecting 'h' in the main configuration menu, and entering the new password.
4) What are the changes to be made while connecting the device in RS-485 or RS-422?	<p>For connecting the device in RS-485 or RS-422 mode, first configure the settings in Main Configuration Menu by selecting the Serial Configuration then change the Serial Interface Mode to RS-485 or RS-422 and save the changes and exit.</p> <p>Connect the device to the RS-485 or RS-422 port and restart it.</p> <p>You can also use a RS-232 to RS-485/422 Converter to connect the device.</p>

8. Contact and Support

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