



Industrial Data Logger 4G LTE

ORDER CODE: RDL838

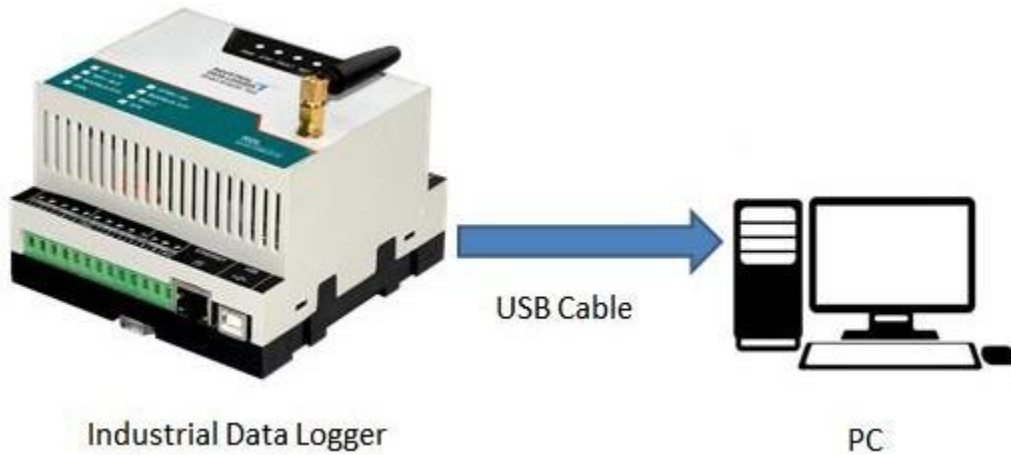
DOCUMENT VERSION: V4.0

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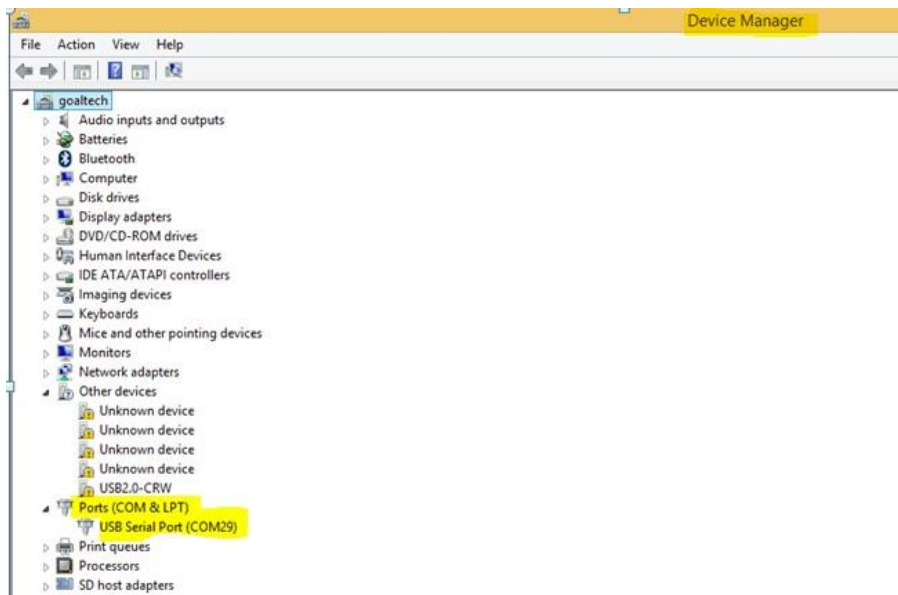
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1. COM Port

This should be the initial step before using the data logger configuration manager.



Connect the USB Port to the configuration system as shown above



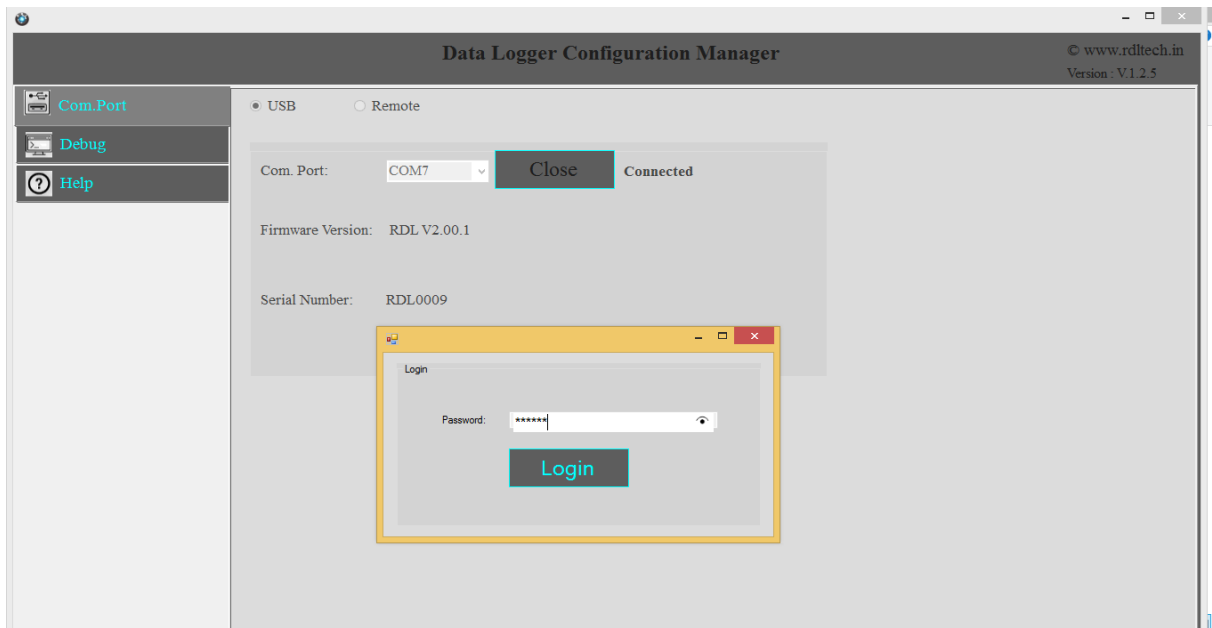
Check the COM Port → **Device Manager** → **Ports** as shown above

NOTE: Ensure that you have the FTDI Com port driver loaded. Please download and install from the link provided below if it is not installed.

Link: <https://www.ftdichip.com/Drivers/VCP.htm>

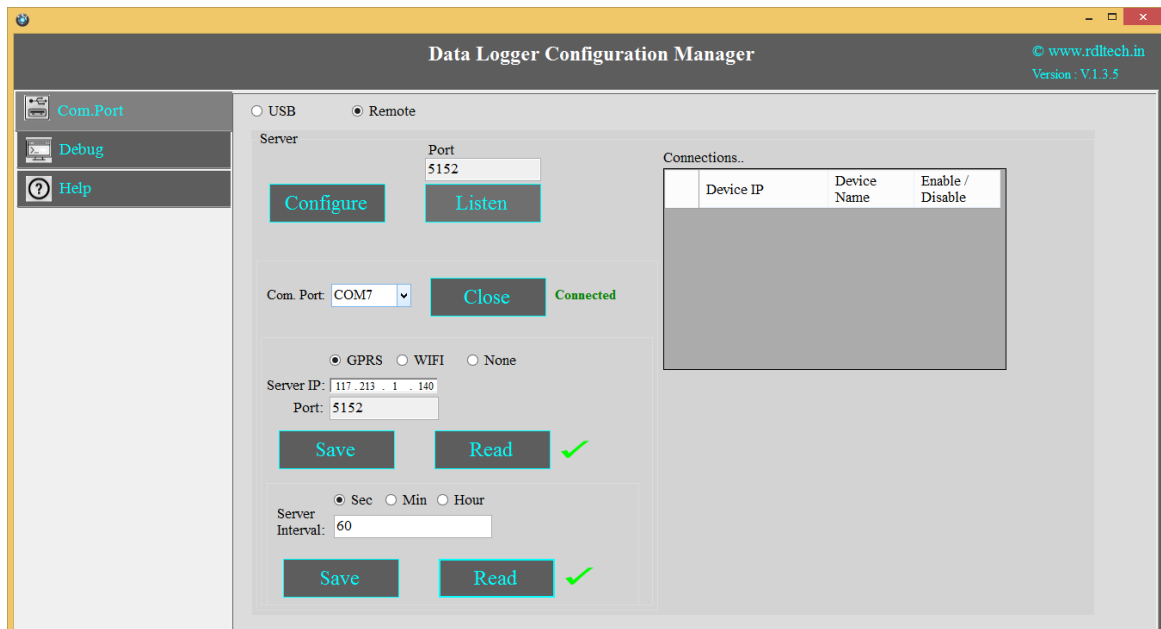
Device can be logged in two ways for configuration: 1. Local Login and
2. Remote Login

Local Login:



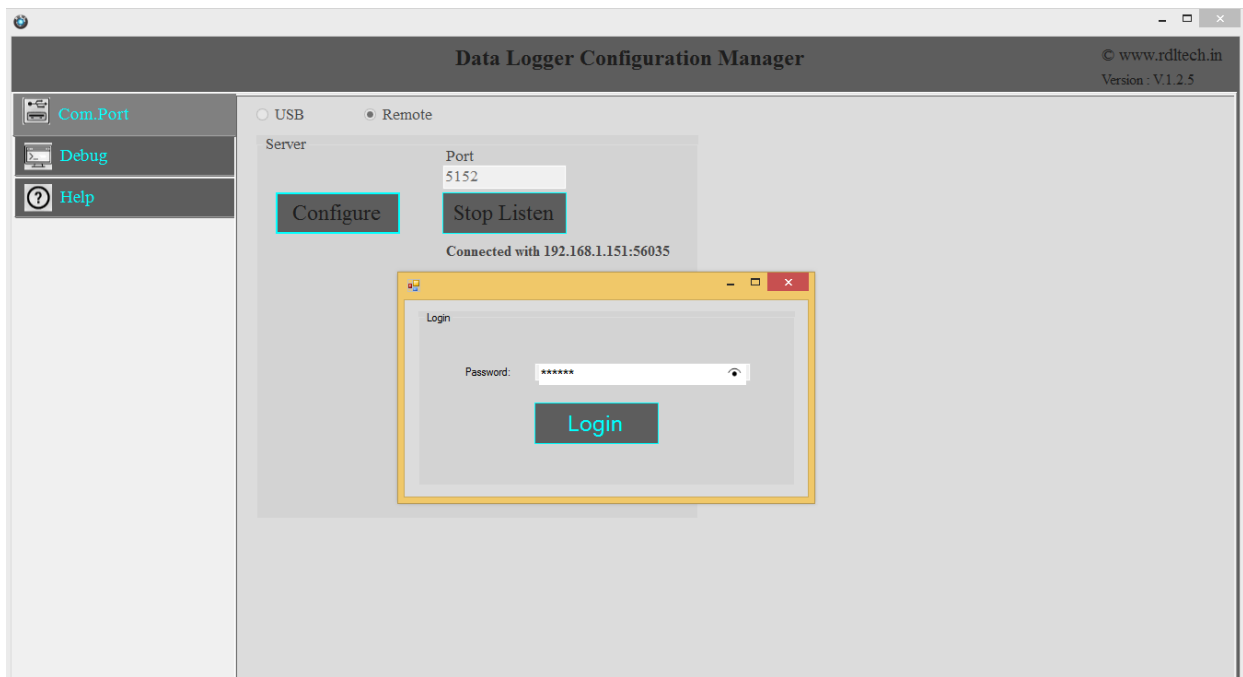
1. Select **COM Port** and click on **Open**
2. Use the Default Password “**RDL123**” during Login

Remote Login:



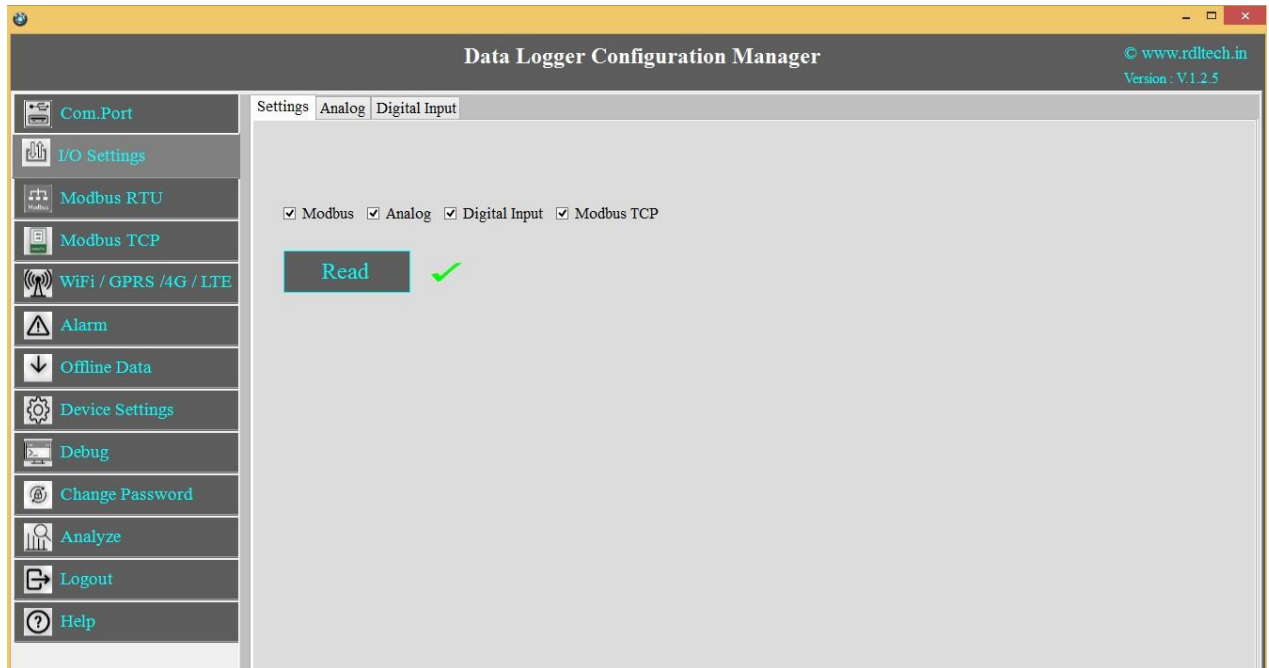
Log in using IP address

1. Select the **COM Port** and click on **Open**.
2. Click on **Configure** and Choose **WiFi** or **GPRS** from the radio button and enter the IP address.
3. In GPRS Configuration use Public IP address. If the configuration is Wi-Fi then you can use Private or Public IP addresses.
4. Click on **Save** Button
5. Click on Read to display the configuration that is already saved. will display the configuration that is already saved
6. Enter the **Server Interval time** of connection
7. Click on **Save**.



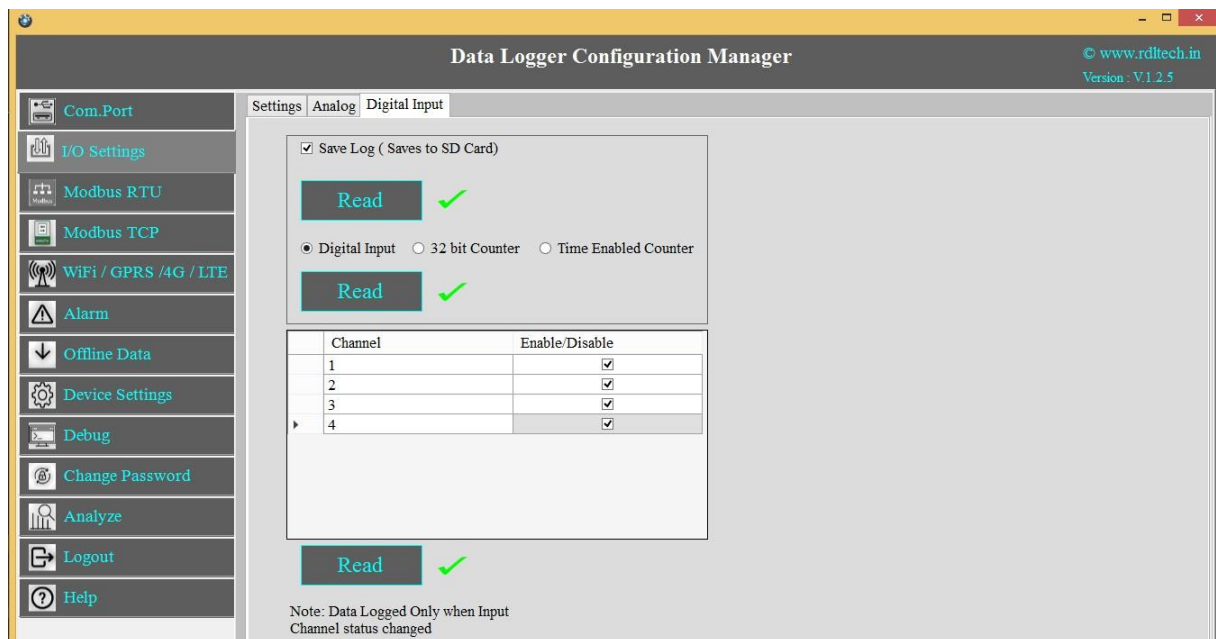
1. Click on **Start Listen** and wait for few seconds to get connected.
2. Use the Default Password “**RDL123**” during Login

2. I/O Settings



Select the required I/O options and click on **Save** button.

2.1 Digital Input Settings



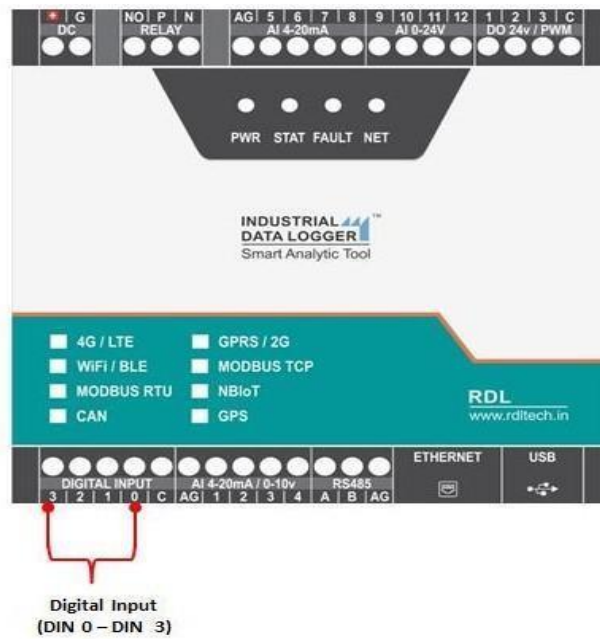
This Setting will indicate which digital input needs to be logged.

1. Select check box ☒ to save the data to the SD Card and click on **Save** button.
2. Select the type of **Digital Input** (Digital Input High/Low, 32 Bit Counter, Time Enabled Counter) and click on **Save** button.
3. Select the Check box ☒ to Enable/Disable Digital Input channel and click on **Save** button.
4. Click on Read to display the configuration that is already saved.

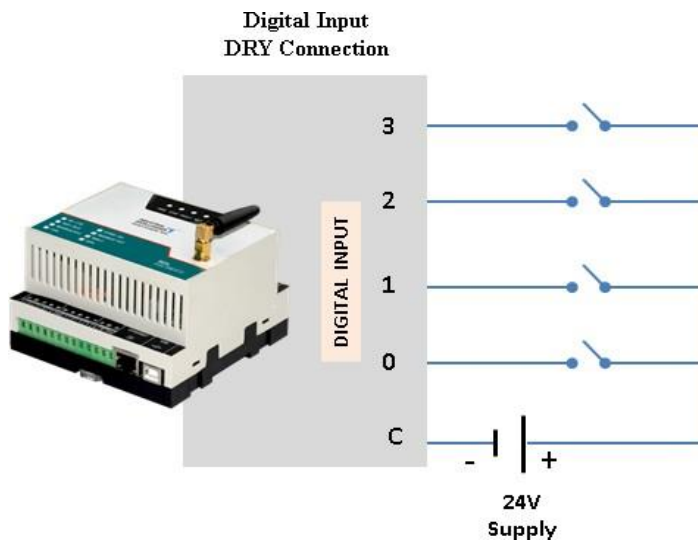
NOTE: Data Logged only when Input channel status changed (From High to Low or Low to High)

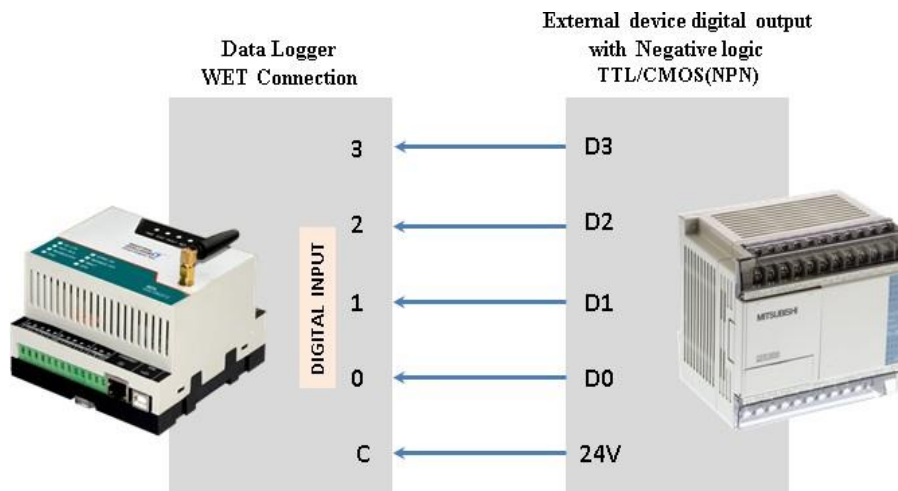
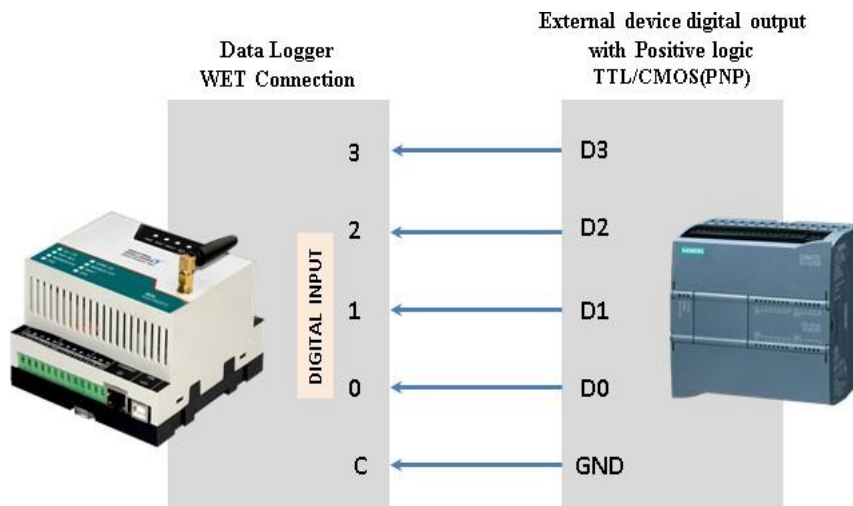
2.2 Digital Input Specification

- Channels: 4
- Input Voltage: 0-24V
 - Logic High: > 5V
 - Logic Low: < 4V
- Isolation : 3750 VRMS
- Supports Inverted DI Status
- Supported Connection: Dry and Wet both
- Maximum Switching Frequency : 5Khz

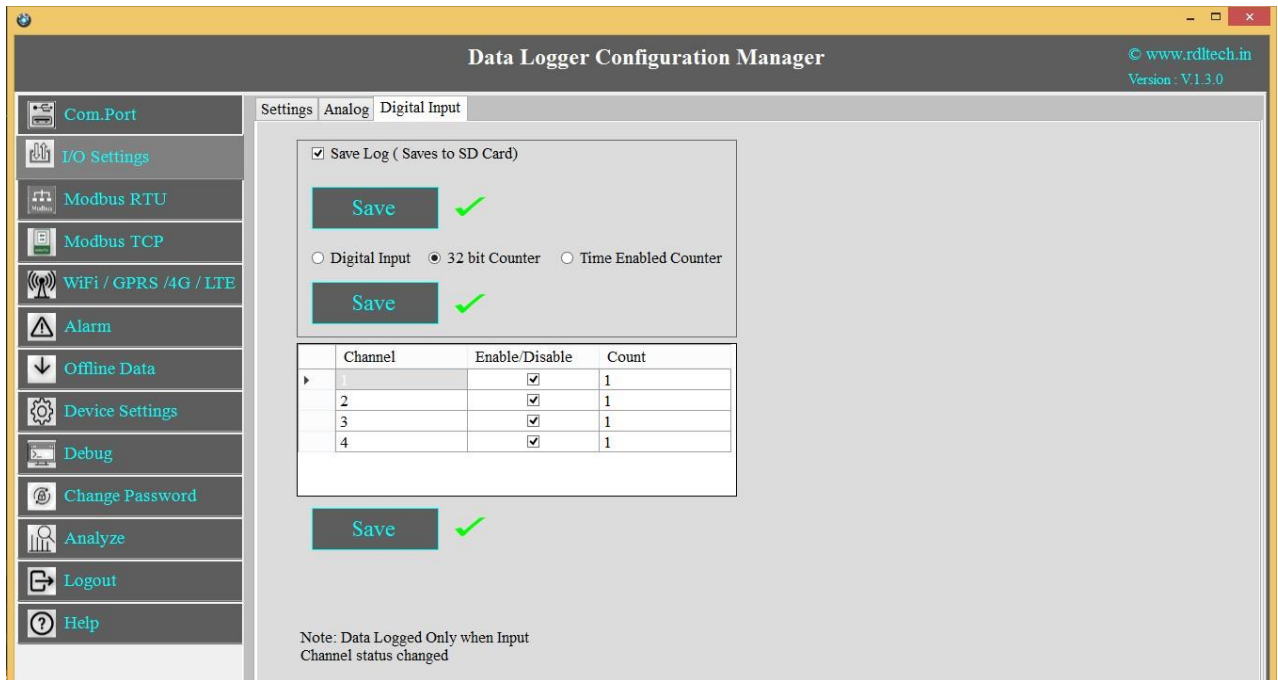


Application Wiring Diagram





2.3 Counter Settings



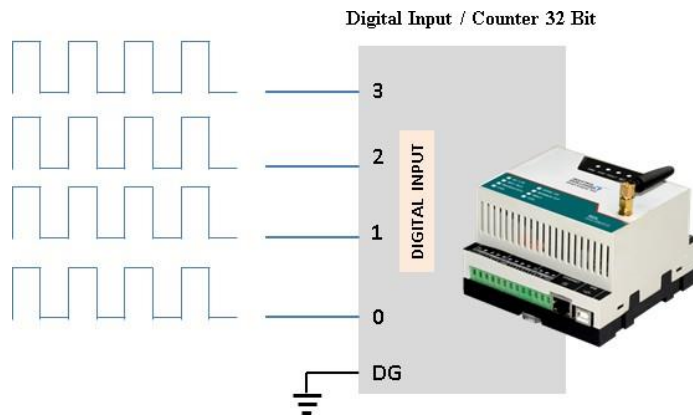
These Settings will configure Digital counter input.

1. Select the Checkbox ☒ to **Enable/Disable** Digital Counter Input channel.
2. Set the Max **Count**
3. Click **Save** to write these count settings in the memory.
4. Click on Read to display the configuration that is already saved. will display the current max count / channel.

NOTE: 1. Data Logged only when Input Channel status changed (From High to Low or Low to High).

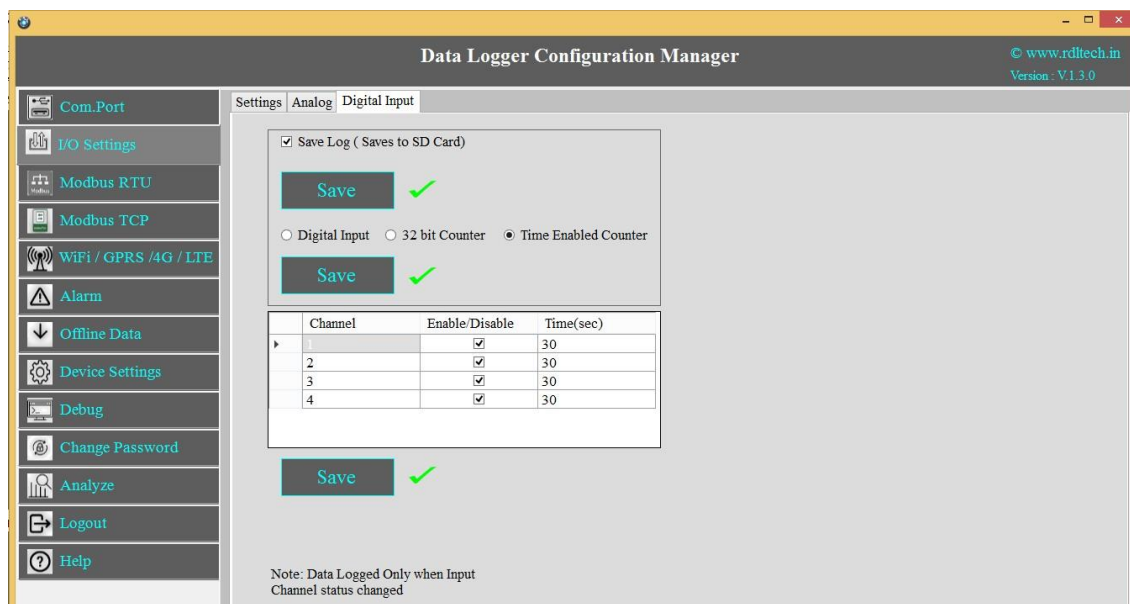
2. Data will be pushed to the Remote Server once counter reaches to max set count (Applicable only when counter option enabled).
3. Once counter reaches the max count then it resets to zero (Applicable only when counter option enabled).

Application Wiring Diagram



2.4 Time Enabled Counter

Counting with respect to time in sec

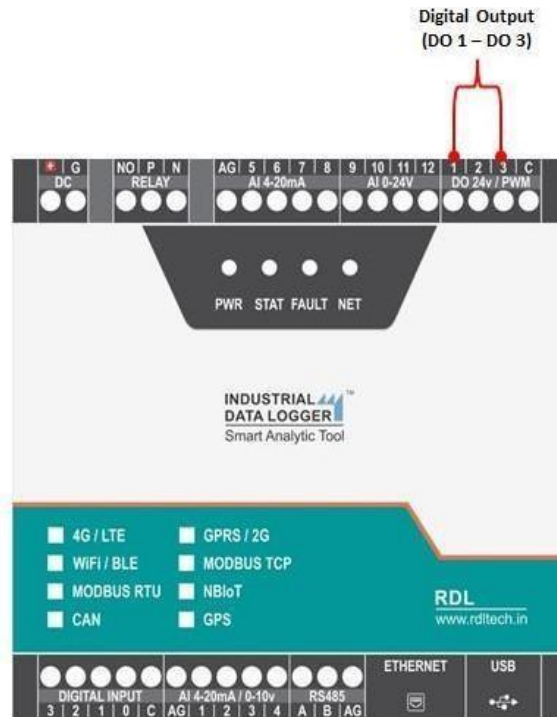


1. Select the Checkbox ☒ to **Enable/Disable** Digital Counter Input channel.
2. Set the **Time(sec)**
3. Click **Save** to write these count settings in the memory.
4. Click on Read to display the configuration that is already saved. will display the current max count / channel.

3. Digital Output

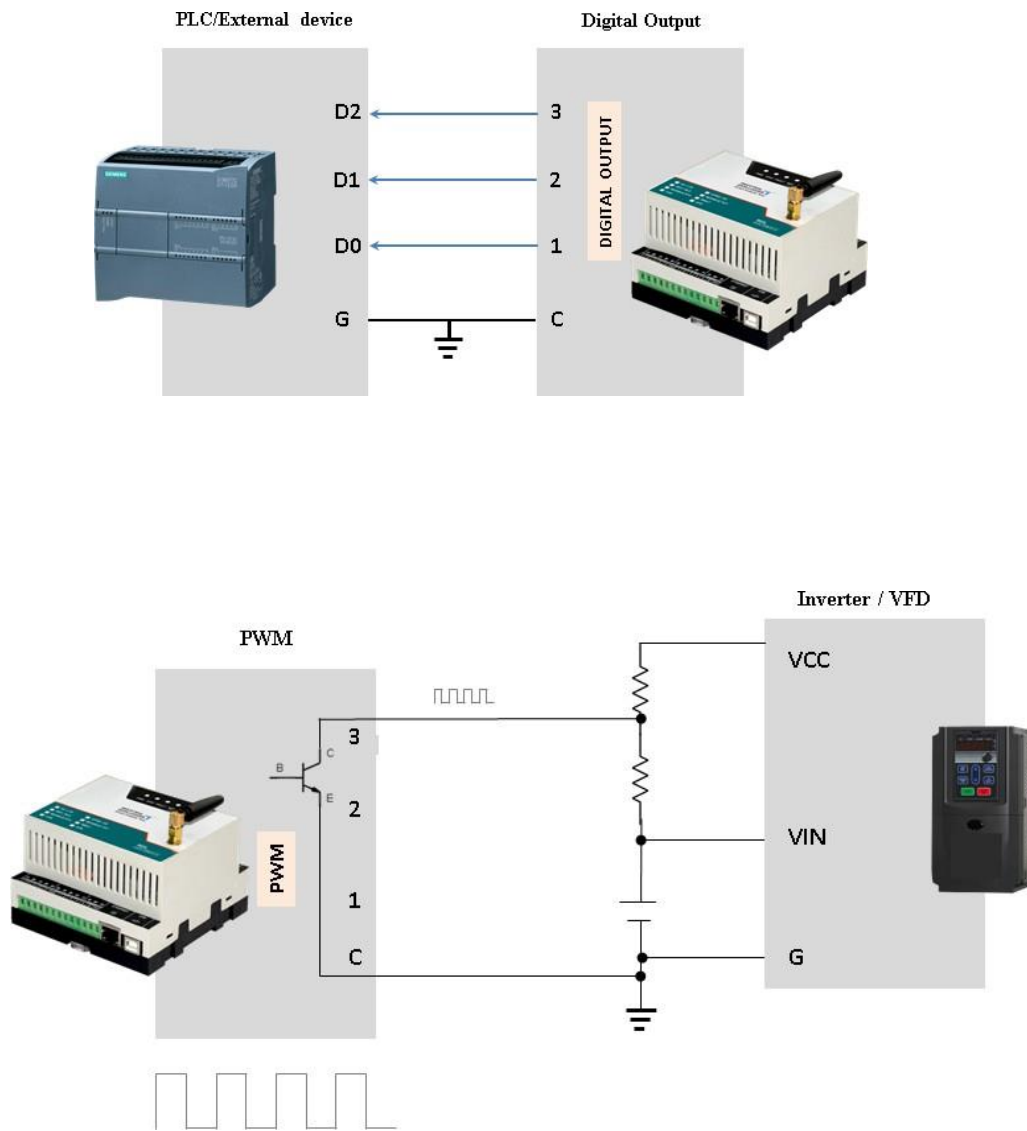
3.1 Digital Output Specification

- Channels: 3
- Open Collector
- Isolation : 3750 VRMS
- Absolute maximum voltage 35V, Current 100mA
- Maximum PWM frequency : 5Khz



NOTE: Max load current 100mA, 35v In the case of load drawing more current you need to add the additional driver.

Application Wiring Diagram



Digital Output:

Digital Output / PWM can controlled directly from server using MQTT Subscribe service.

Command: Digital_Channel =Logic High/ Low

Example:

- 1.DO1=0 → Digital output (DO) 1 becomes LOW
- 2.DO1=1 → Digital output (DO) 1 becomes HIGH
- 3.DO2=0 → Digital output (DO) 2 becomes LOW
- 4.DO2=1 → Digital output (DO) 2 becomes HIGH
- 5.DO3=0 → Digital output (DO) 3 becomes LOW
- 6.DO3=1 → Digital output (DO) 3 becomes HIGH

NOTE: Digital Output works only for 4G and 2G, it doesn't support for WiFi Communication.

Digital Output handling using MQTT subscribe service

Websocket

Messages are displayed in real-time as they are received by the broker. It's not possible to view historical data.

Send message

Topic

INTEST

Message

DO1=0

Send

Received messages

Topic	Message
INTEST	DO1=0

Websocket

Messages are displayed in real-time as they are received by the broker. It's not possible to view historical data.

Send message

Topic

INTEST

Message

DO1=1

Send

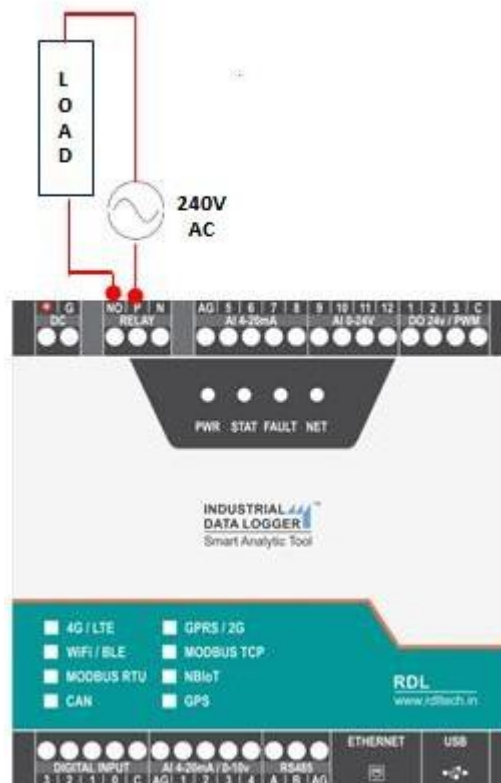
Received messages

Topic	Message
INTEST	DO1=0
INTEST	DO1=1

4. Relay Output

Relay can be controlled directly from server using MQTT Subscribe service.

Command: Relay = Logic High/ Low



Relay output command:

RL1=1 → Relay becomes HIGH

RL1=0 → Relay becomes LOW

Relay Output handling using MQTT subscribe service

Websocket

Messages are displayed in real-time as they are received by the broker. It's not possible to view historical data.

Send message

Topic

Message

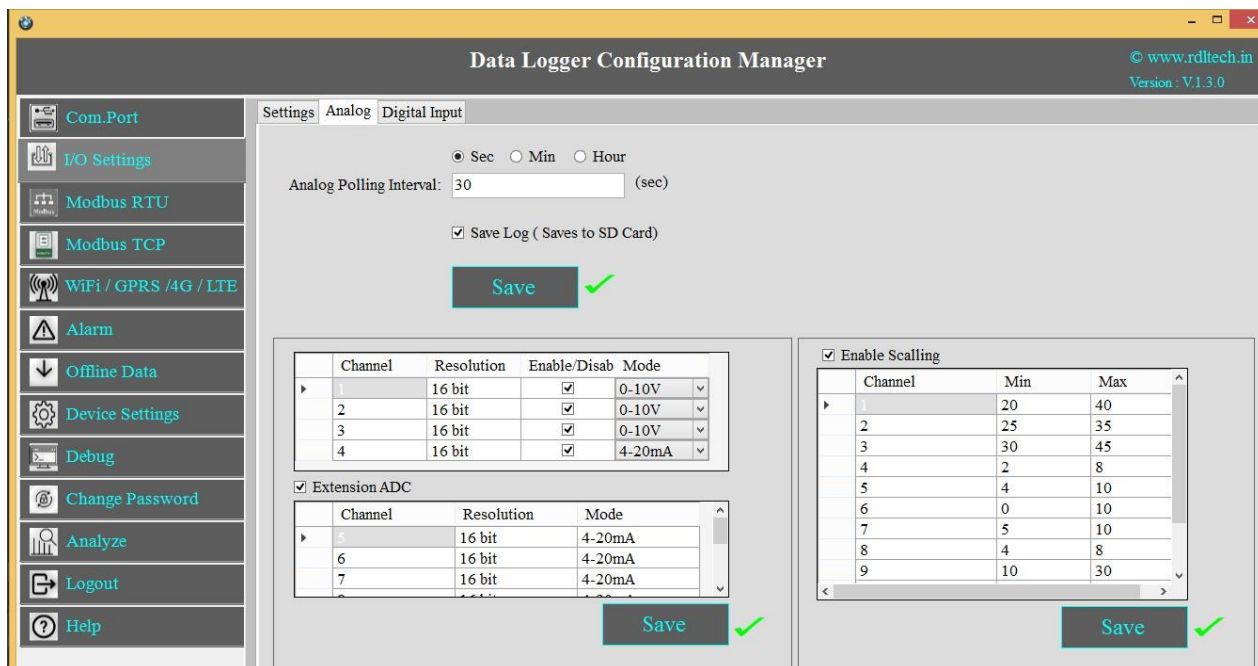
Received messages

Topic	Message
INTEST	RL1=1
INTEST	RL1=0

5. Analog

5.1 Analog Channel Settings

The below given settings shows how to configure Loop current (4-20mA) and 0-10V Analog Channels.



Data Logger Configuration Manager www.rdltech.in
Version : V1.3.0

Settings Analog Digital Input

☒ Sec ☐ Min ☐ Hour
 Analog Polling Interval: 30 (sec)
☒ Save Log (Saves to SD Card)
 Save ✓

Channel	Resolution	Enable/Disab	Mode
1	16 bit	☒	0-10V
2	16 bit	☒	0-10V
3	16 bit	☒	0-10V
4	16 bit	☒	4-20mA

☒ Extension ADC

Channel	Resolution	Mode
5	16 bit	4-20mA
6	16 bit	4-20mA
7	16 bit	4-20mA

Save ✓

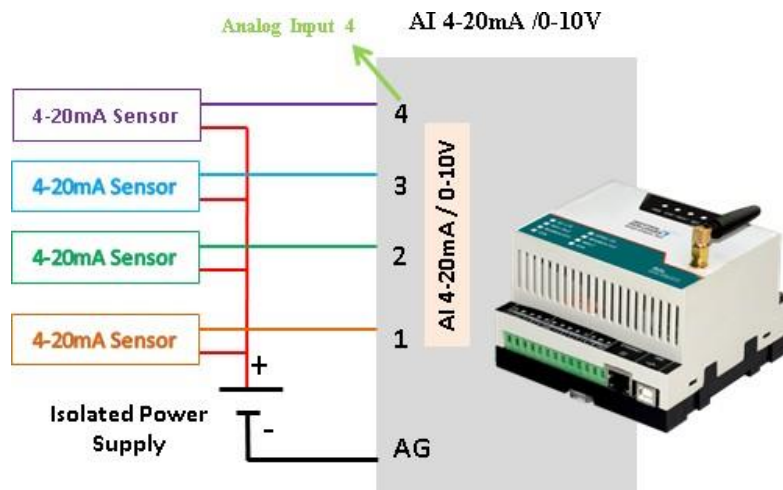
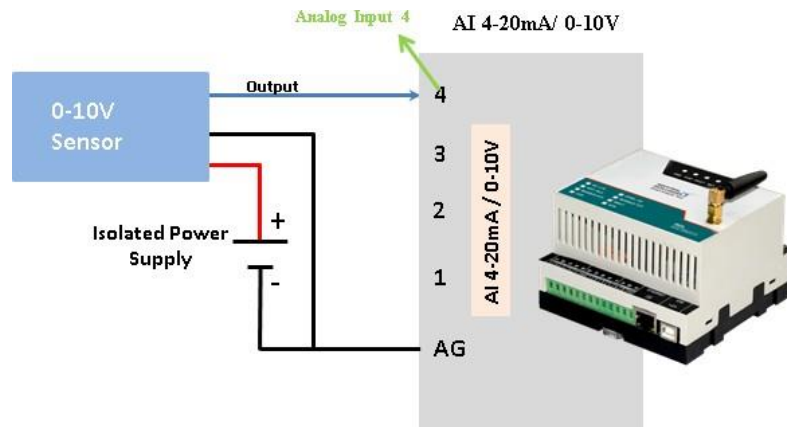
☒ Enable Scaling

Channel	Min	Max
1	20	40
2	25	35
3	30	45
4	2	8
5	4	10
6	0	10
7	5	10
8	4	8
9	10	30

Save ✓

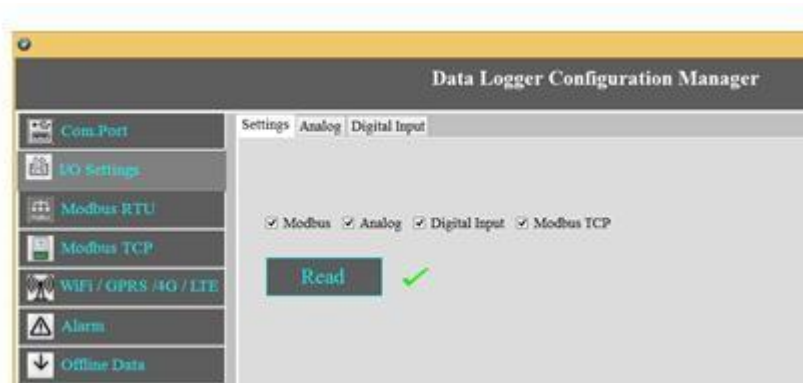
1. Select the Polling Interval **sec/min/hour**
2. Set the **Polling Interval**
3. **Save Log:** Select the Check box ☒ to store the data to the SD Card.
4. Click on **Save** button will write these configuration settings in the memory.
5. Select the Check box to **Enable/Disable** Analog channel
6. Select **4-20mA / 0-10V** from the dropdown.
7. **Extension ADC** is an additional option under this the first four analog channels are for **4-20mA loop current** and the next four for **0- 24V channel**.
8. **Scaling:** Click on the check box ☒ to **enable scaling**. Scale the raw value of input to required output value.
9. Click on **Save** button to save the above configuration.
10. Click on **Read**, to display the configuration that is already saved.

Application Wiring Diagram



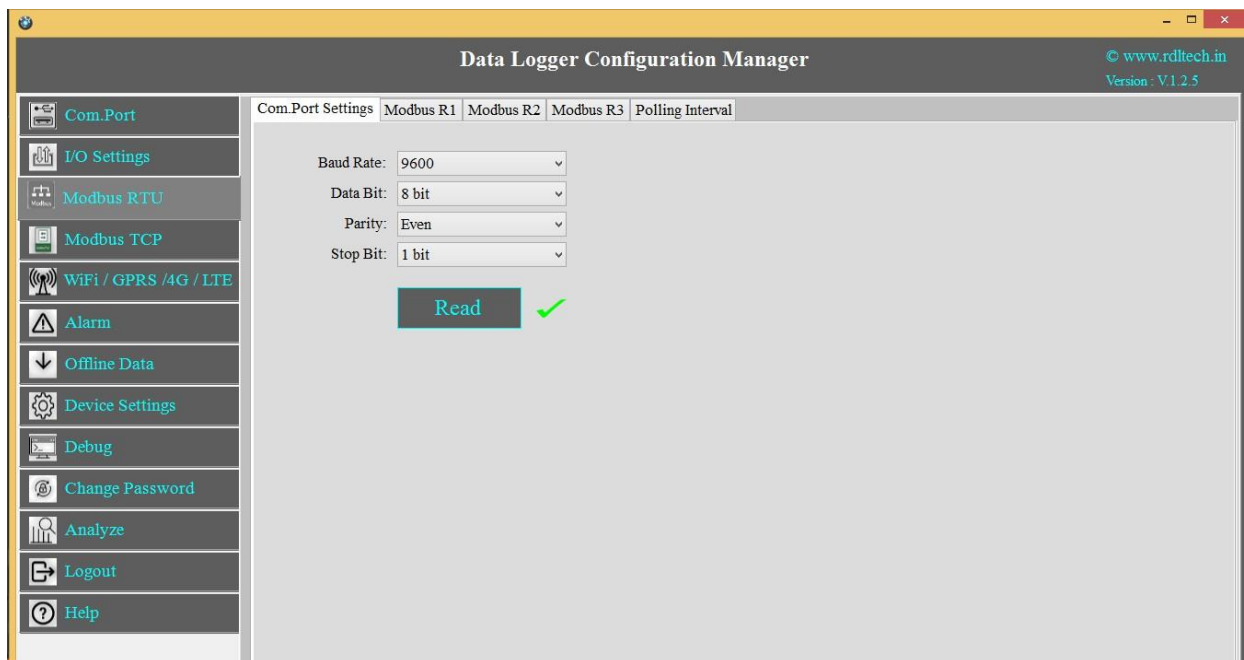
NOTE: Don't connect Voltage source when Channel is set for Current Source Mode.

6. MODBUS RTU



Select the check box ☒ for enabling the **MODBUS** and Click on **Save** button.

6.1 Com Port Settings



1. Click on **MODBUS RTU** from the side bar menu
2. Click on **Read** to know the previous stored Configuration.
3. Click on **Com Port** Settings
 - a. Select **Baud Rate** from the dropdown.

- b. Select **Data Bit** from the dropdown.
- c. Select **Parity** from the dropdown.
- d. Select **Stop Bit** from the dropdown.
- e. Click on **Save** button.
- f. Click on Read to display the configuration that is already saved., will display the configuration that is already saved.

Based on Meter/Slave type the register polling classified in three Bank R1, R2 and R3.

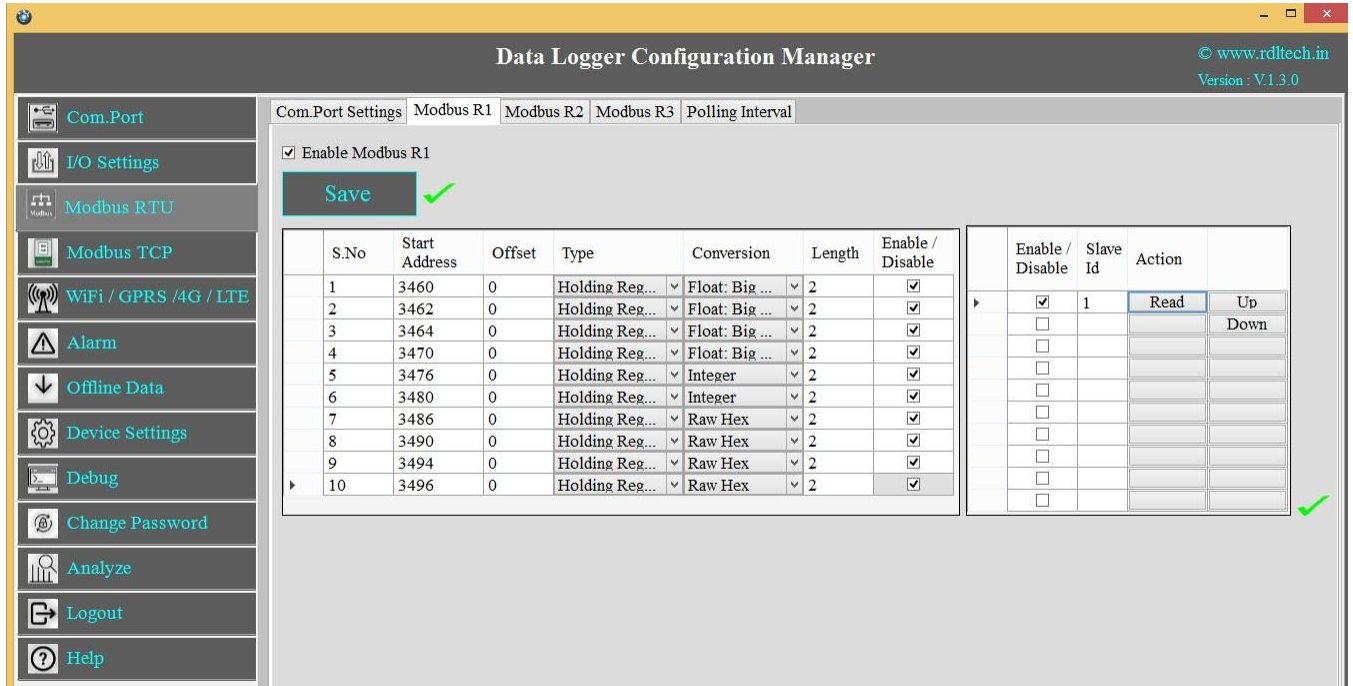
R1 Register Bank meant for reading maximum 10 slave devices and maximum register length of 100 for each slave.

R2 Register Bank meant for reading maximum 32 similar slave /meters with 30 register length for each slave/meter

R3 Register Bank meant for reading maximum 10 devices with 100 register length for each slave devices and all slaves can be set for different polling time.

NOTE: Maximum 1000+ tags can be polled by combining R1, R2, and R3 Register Banks.

MODBUS R1:



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Version : V1.3.0

Com.Port Settings | **Modbus R1** | Modbus R2 | Modbus R3 | Polling Interval

☒ Enable Modbus R1

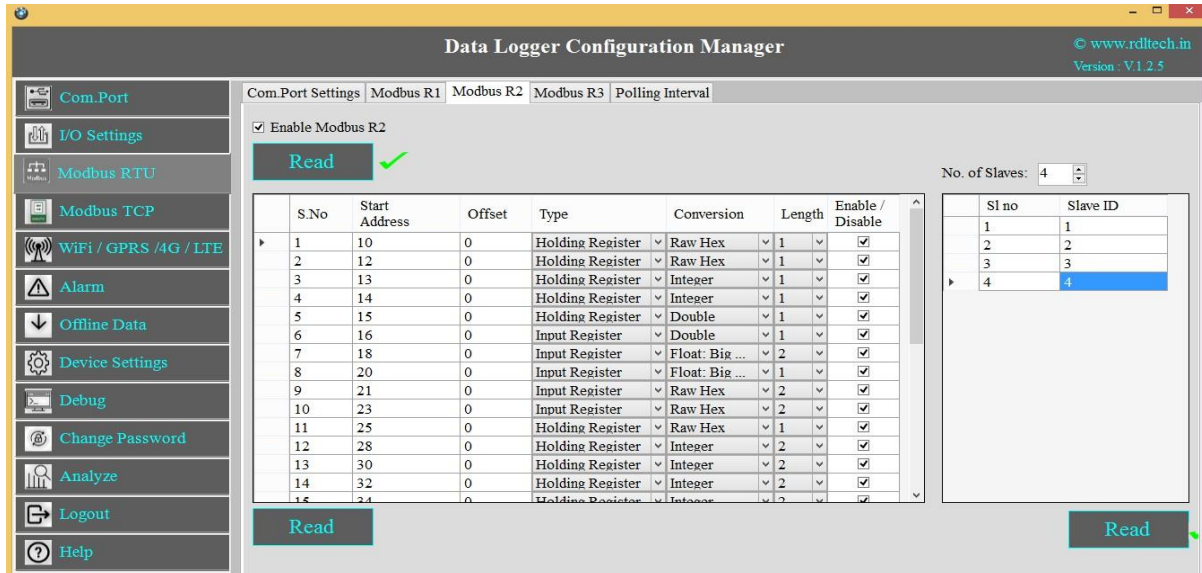
Save ✓

S.No	Start Address	Offset	Type	Conversion	Length	Enable / Disable
1	3460	0	Holding Reg...	Float: Big ...	2	☒
2	3462	0	Holding Reg...	Float: Big ...	2	☒
3	3464	0	Holding Reg...	Float: Big ...	2	☒
4	3470	0	Holding Reg...	Float: Big ...	2	☒
5	3476	0	Holding Reg...	Integer	2	☒
6	3480	0	Holding Reg...	Integer	2	☒
7	3486	0	Holding Reg...	Raw Hex	2	☒
8	3490	0	Holding Reg...	Raw Hex	2	☒
9	3494	0	Holding Reg...	Raw Hex	2	☒
10	3496	0	Holding Reg...	Raw Hex	2	☒

Enable / Disable	Slave Id	Action
☒	1	Read
☐		Up
☐		Down
☐		
☐		
☐		
☐		
☐		
☐		
☐		
☐		
☐		

1. Click on the check box ☒ to **enable MODBUS Register Bank R1**, and click on **Save** button.
2. Enter MODBUS Register details as shown above
3. Enter MODBUS credential.
R1 Register Bank supports 10 slave devices for each slave you can configure max length up to 100 register.
4. Select **Enable/Disable** check box ☒ to poll the register.
5. Click on **Save** button.

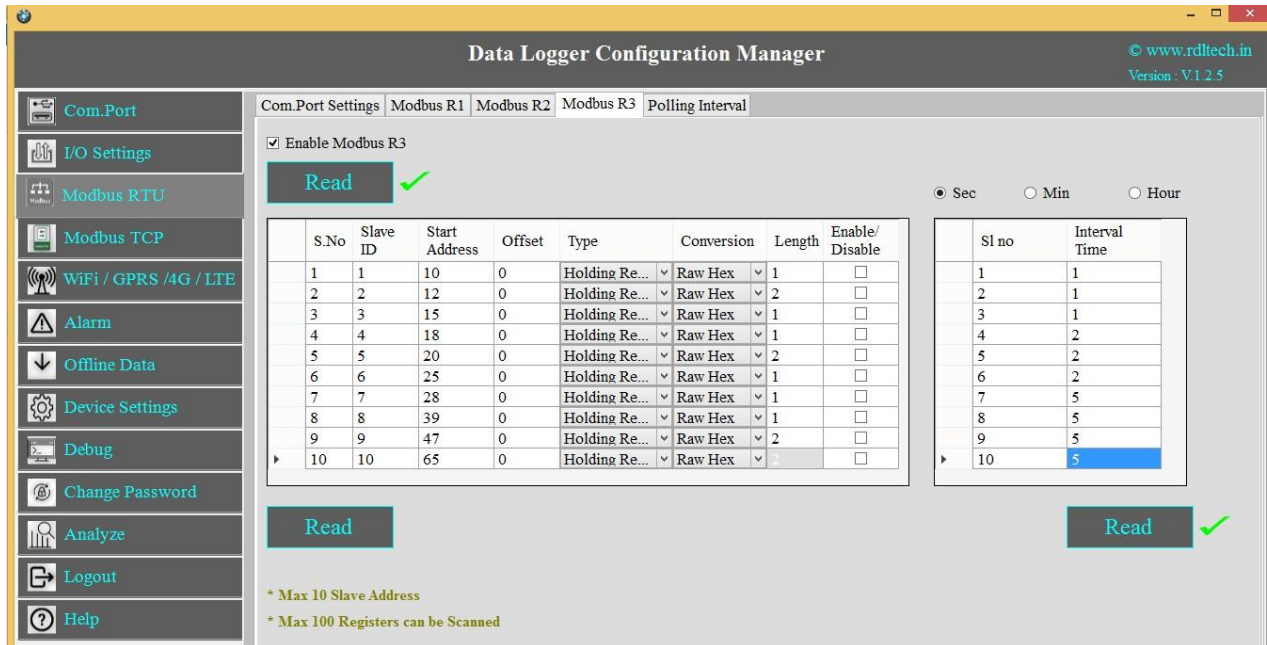
MODBUS R2:



1. Click on the check box ☒ to enable **MODBUS Register Bank R2**, and click on **Save** button.
2. Enter MODBUS credential as shown above.
This supports for 32 similar slaves/meters with 30 registers length for each slave/meter
3. Select **Enable/Disable** check box ☒ to poll the register
4. Click on **Save** button.

NOTE: In R2, Address configuration is same for multiple slaves; it has only facility to change Slave ID of each device.

MODBUS R3:



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Com.Port Settings | **Modbus R1** | Modbus R2 | **Modbus R3** | Polling Interval

☒ Enable Modbus R3

Read ✓

● Sec ○ Min ○ Hour

S.No	Slave ID	Start Address	Offset	Type	Conversion	Length	Enable/Disable
1	1	10	0	Holding Re...	Raw Hex	1	☐
2	2	12	0	Holding Re...	Raw Hex	2	☐
3	3	15	0	Holding Re...	Raw Hex	1	☐
4	4	18	0	Holding Re...	Raw Hex	1	☐
5	5	20	0	Holding Re...	Raw Hex	2	☐
6	6	25	0	Holding Re...	Raw Hex	1	☐
7	7	28	0	Holding Re...	Raw Hex	1	☐
8	8	39	0	Holding Re...	Raw Hex	1	☐
9	9	47	0	Holding Re...	Raw Hex	2	☐
10	10	65	0	Holding Re...	Raw Hex		☐

Read

* Max 10 Slave Address
* Max 100 Registers can be Scanned

Sl no	Interval Time
1	1
2	1
3	1
4	2
5	2
6	2
7	5
8	5
9	5
10	5

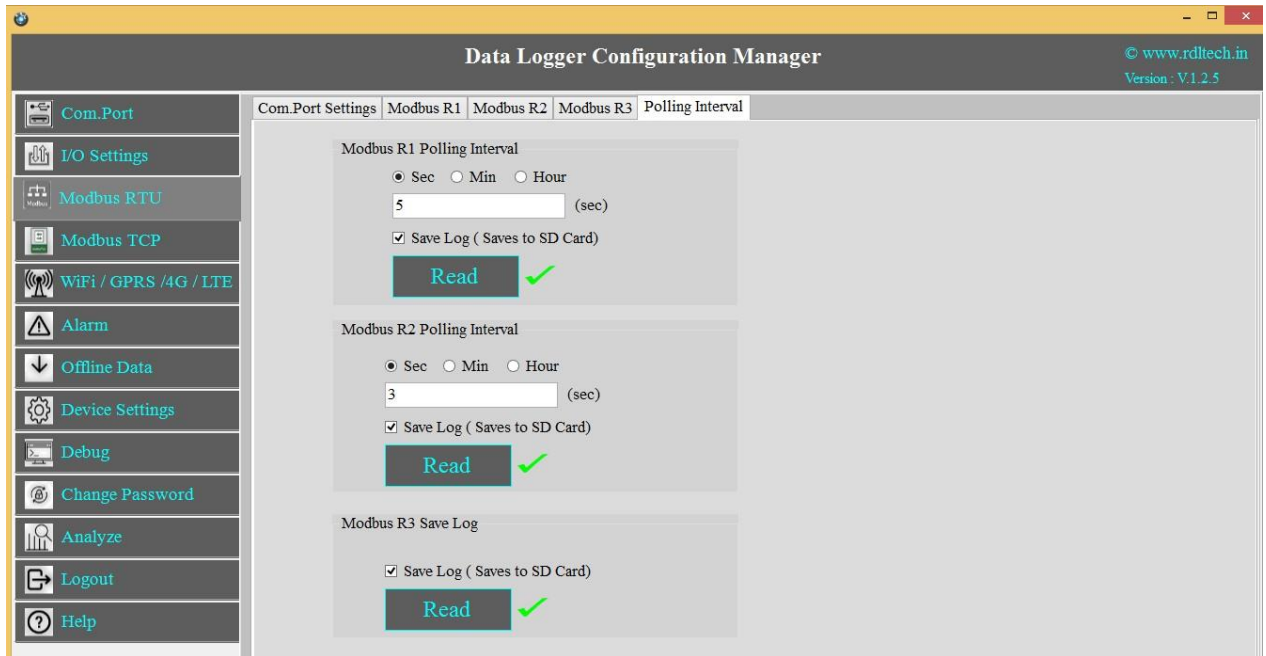
Read ✓

1. Click on the check box ☒ to enable **MODBUS Register Bank R3**, and click on **Save** button.
2. Enter MODBUS credential as shown above.

This supports 10 slaves, for each slave 10 start registers are available and for each start register configure up to 100 lengths.

3. R3 has the facility to add polling time for each slave ID.
4. Select **Enable/Disable** check box ☒ to poll the register.
5. Click on **Save** button.

6.2 MODBUS RTU Polling Interval



The screenshot shows the 'Data Logger Configuration Manager' window. The left sidebar contains a menu with options: Com.Port, I/O Settings, Modbus RTU, Modbus TCP, WiFi / GPRS /4G / LTE, Alarm, Offline Data, Device Settings, Debug, Change Password, Analyze, Logout, and Help. The main area has tabs for Com.Port Settings, Modbus R1, Modbus R2, Modbus R3, and Polling Interval. The 'Polling Interval' tab is active, displaying three sections: 'Modbus R1 Polling Interval', 'Modbus R2 Polling Interval', and 'Modbus R3 Save Log'. Each section has radio buttons for 'Sec', 'Min', and 'Hour', a text input field for the interval value, a 'Save Log (Saves to SD Card)' checkbox, and a 'Read' button. The 'Modbus R1' section has 'Sec' selected, a value of 5, and the 'Save Log' checkbox is checked. The 'Modbus R2' section has 'Sec' selected, a value of 3, and the 'Save Log' checkbox is checked. The 'Modbus R3' section has the 'Save Log' checkbox checked. Each 'Read' button is accompanied by a green checkmark.

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Com.Port Settings | **Modbus R1** | **Modbus R2** | **Modbus R3** | **Polling Interval**

Modbus R1 Polling Interval

☒ Sec ☐ Min ☐ Hour

5 (sec)

☒ Save Log (Saves to SD Card)

Read ✓

Modbus R2 Polling Interval

☒ Sec ☐ Min ☐ Hour

3 (sec)

☒ Save Log (Saves to SD Card)

Read ✓

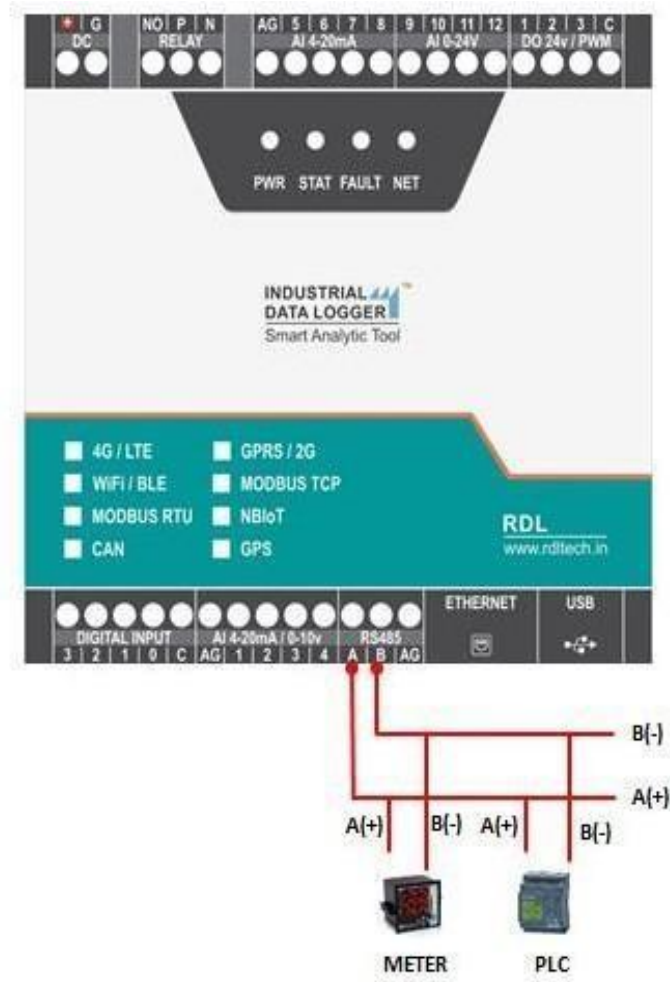
Modbus R3 Save Log

☒ Save Log (Saves to SD Card)

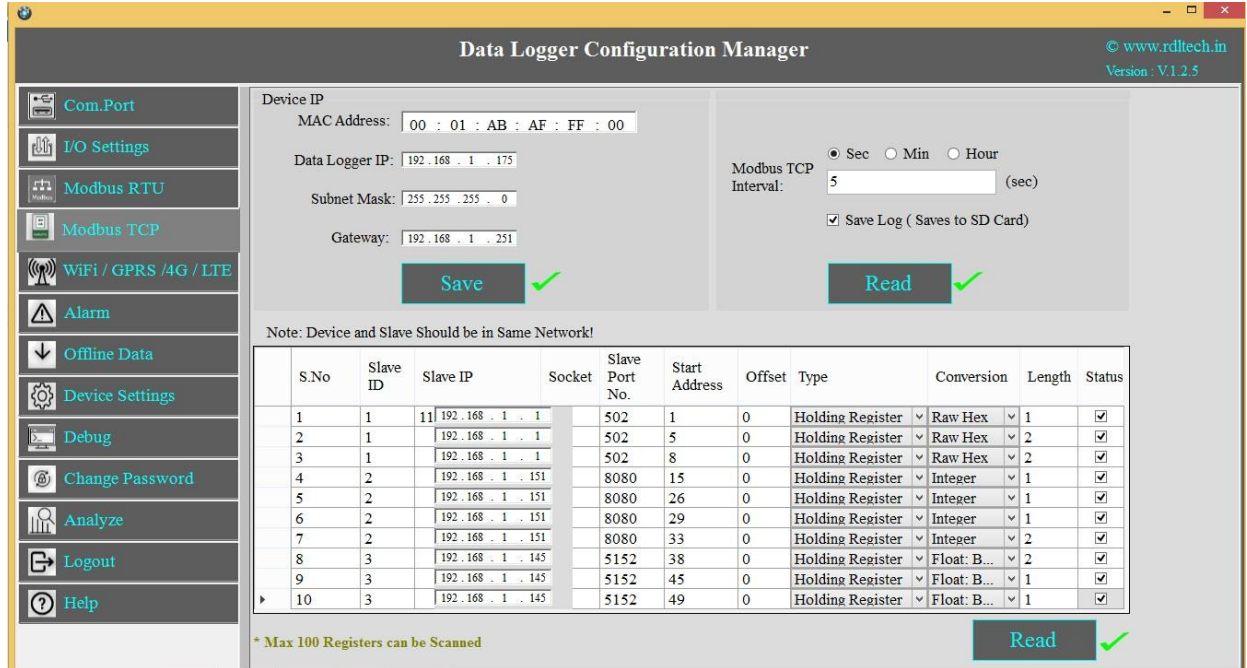
Read ✓

1. Select the Polling Interval **sec/min/hour**.
2. Set the **MODBUS Polling Interval**.
3. Click on check box ☒ to Save the Log.
4. Click on **Save** button to save the above configuration.
5. Click on Read to display the configuration that is already saved.

Application Wiring Diagram



7. MODBUS TCP Settings



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Version : V1.2.5

Com.Port
I/O Settings
Modbus RTU
Modbus TCP
WiFi / GPRS /4G / LTE
Alarm
Offline Data
Device Settings
Debug
Change Password
Analyze
Logout
Help

Device IP
MAC Address: 00 : 01 : AB : AF : FF : 00
Data Logger IP: 192 . 168 . 1 . 175
Subnet Mask: 255 . 255 . 255 . 0
Gateway: 192 . 168 . 1 . 251

Modbus TCP
Interval: 5 (sec)
☐ Sec ☐ Min ☐ Hour
☒ Save Log (Saves to SD Card)

Save  **Read** 

Note: Device and Slave Should be in Same Network!

S.No	Slave ID	Slave IP	Socket	Slave Port No.	Start Address	Offset	Type	Conversion	Length	Status
1	1	192 . 168 . 1 . 1	502	1	0	Holding Register	Raw Hex	1	☒	
2	1	192 . 168 . 1 . 1	502	5	0	Holding Register	Raw Hex	2	☒	
3	1	192 . 168 . 1 . 1	502	8	0	Holding Register	Raw Hex	2	☒	
4	2	192 . 168 . 1 . 151	8080	15	0	Holding Register	Integer	1	☒	
5	2	192 . 168 . 1 . 151	8080	26	0	Holding Register	Integer	1	☒	
6	2	192 . 168 . 1 . 151	8080	29	0	Holding Register	Integer	1	☒	
7	2	192 . 168 . 1 . 151	8080	33	0	Holding Register	Integer	2	☒	
8	3	192 . 168 . 1 . 145	5152	38	0	Holding Register	Float: B...	2	☒	
9	3	192 . 168 . 1 . 145	5152	45	0	Holding Register	Float: B...	1	☒	
10	3	192 . 168 . 1 . 145	5152	49	0	Holding Register	Float: B...	1	☒	

* Max 100 Registers can be Scanned

Read 

1. Set the Device MAC Address, Data Logger IP, Subnet Mask, Gateway and click on **Save**.
2. **Slave ID:** This is the MODBUS Slave ID. Maximum 10 Slave info can be accessed.
3. **Slave IP:** Mention the IP Address of the Slave.
4. **Socket:** If the Slave IP address is same for multiple requests then the socket number will be the same. If the IP address is different, then the socket number is different as shown above (**Ex:** For Slave ID 1 and 3 the slave IP is same (192.168.1.187) so the socket number should be the same (0)).
5. **Slave Port No:** Mention the Port No. (Default 502)
6. **Start Address:** This is the starting address of the slave from where data needs to be read.
7. **Offset:** Enter Offset of the Slave device.
8. **Type:** Mention the register type. It could be Coil/Input Register/Holding Register.
9. **Conversion:**

Raw Hex: MODBUS 16 bits are extracted from slaves.

Integer: MODBUS 16 bits are extracted from slaves.

Double: MODBUS 32 bits are extracted from slaves.

Float-Big Endian: MODBUS floats are extracted from slaves in Big Endian format.

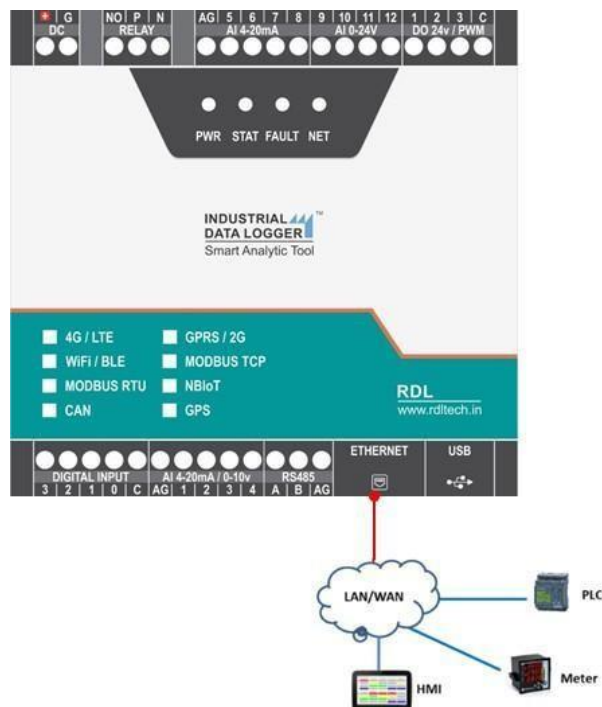
Float-Little Endian: MODBUS floats are extracted from slaves in Little Endian format.

64 bit UINT: MODBUS 64 bits are extracted from slaves.

10. **Length:** Total length will be 100, you can use length of 1-100 of 16 bit data
11. **Status:** If check box ☒ is enabled, the slave id will be ENABLED for polling, else slave id polling will be DISABLED.
12. Click on **Save** button to save the above configuration.
13. Click on Read to display the configuration that is already saved., to display the configuration that is already saved
14. Select the Polling Interval **sec/min/hour**

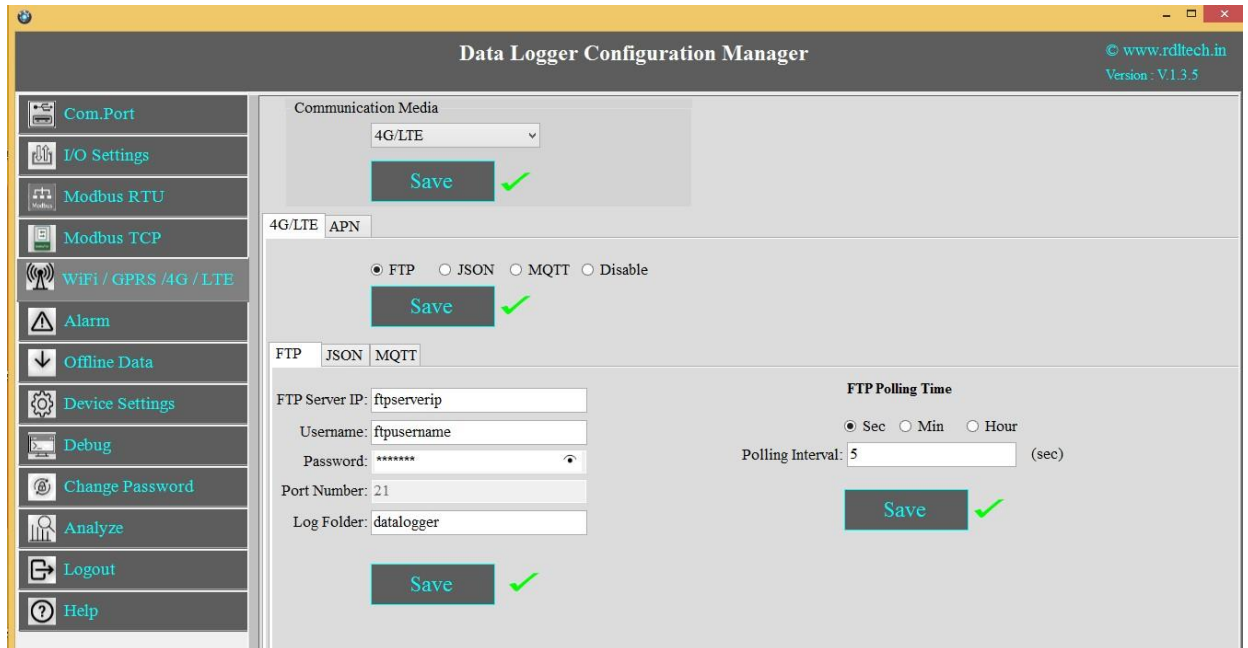
- NOTE:**
1. Device and Slave should be in same network
 2. Max 100 registers can be scanned.

Application Wiring Diagram



8. Wi-Fi/GPRS/4G/LTE Settings

8.1 4G/LTE FTP Settings



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Version : V.1.3.5

Communication Media
4G/LTE ✓

4G/LTE APN

☒ FTP ☐ JSON ☐ MQTT ☐ Disable
 ✓

FTP JSON MQTT

FTP Server IP: ftpserverip
Username: ftpusername
Password: *****
Port Number: 21
Log Folder: datalogger
 ✓

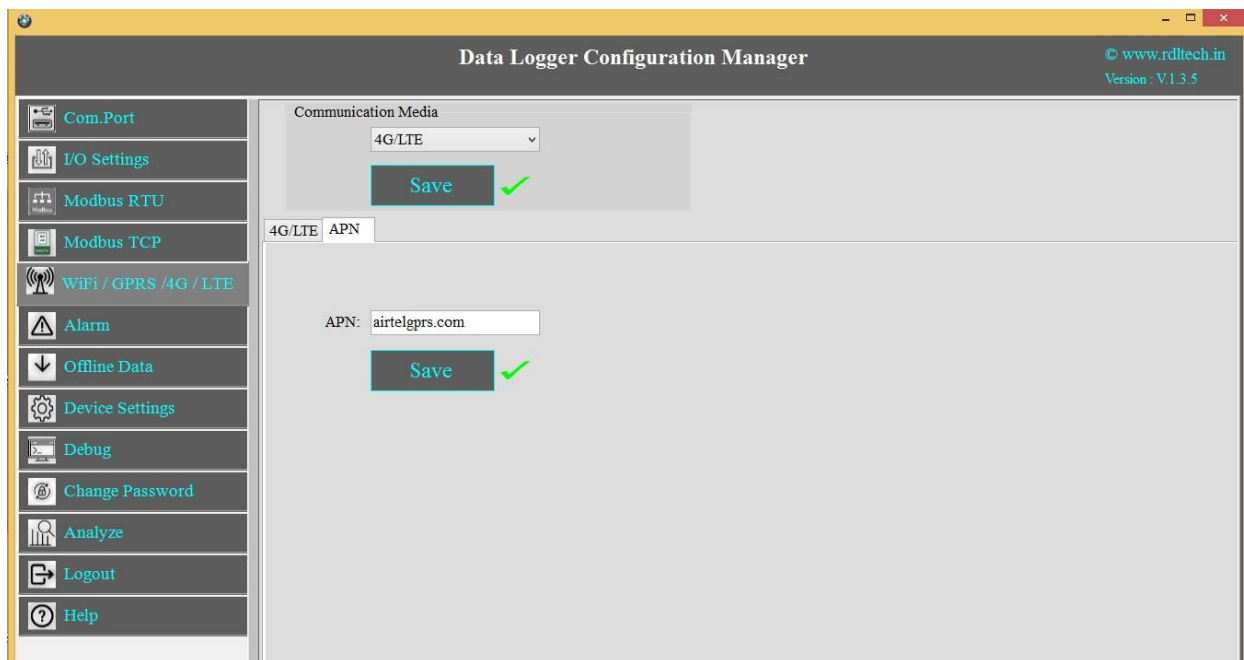
FTP Polling Time
☒ Sec ☐ Min ☐ Hour
Polling Interval: 5 (sec)
 ✓

1. Choose **4G/LTE** in the **Communication Media**. Click on **Save**.
2. Select the protocol **FTP** and **Save**.
3. Provide FTP Server IP, Username, Password.
4. **Log Folder**: Provide folder name for the FTP Server.
5. Click on **Save** will save these settings in the memory.
6. **APN**: Provide APN for the connection. Click on **Save**.
Ex: for BSNL it is "bsnlnet".
7. **FTP Uploading Time**: Select the Polling Interval **sec/min/hour**
8. Click on **Save** button to save the above configuration.
9. Click on Read to display the configuration that is already saved.

NOTE: FTP Account creating guideline document. Please go through the below given link document.

LINK1: <https://github.com/researchdesignlab/Industrial-Data-Logger/blob/master/CREATING%20FTP%20ACCOUNT.pdf>

YouTube Link: <https://www.youtube.com/watch?v= MfcA8Jcmtk>



APN: Provide APN for the connection. Click on **Save**.

Ex: for BSNL → "**bsnlnet**".

Airtel → "**airtelgprs.com**"

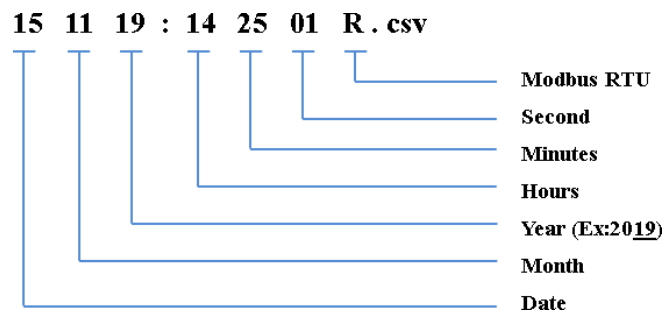
Idea → "**internet**"

8.2 4G/LTE FTP Data Uploading Format:

8.2.1 MODBUS RTU Data Uploading Format

File uploading format for given date 15/11/2019 will be

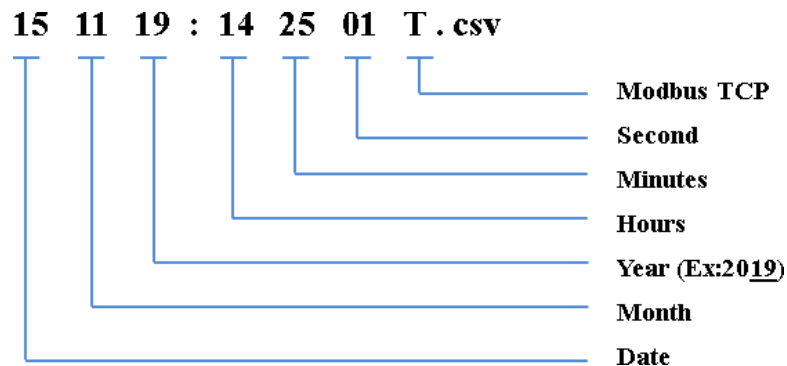
151119:142501R.csv



8.2.2 MODBUS TCP Data Uploading Format

File uploading format for given date 15/11/2019 will be

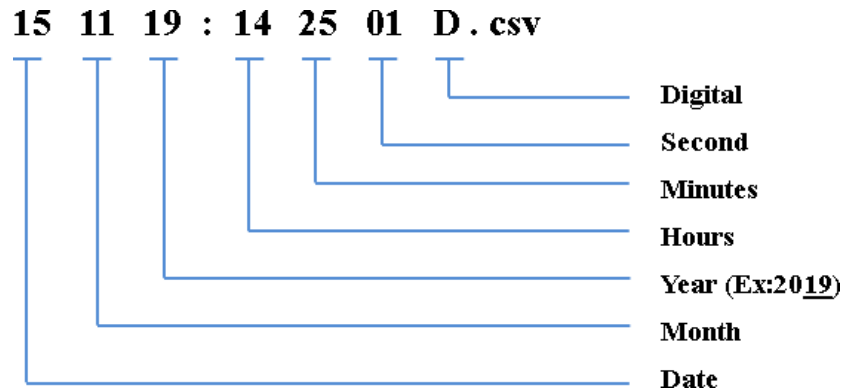
151119:142501T.csv



8.2.3 Digital Input Data Uploading Format

File uploading format for given date 15/11/2019 will be

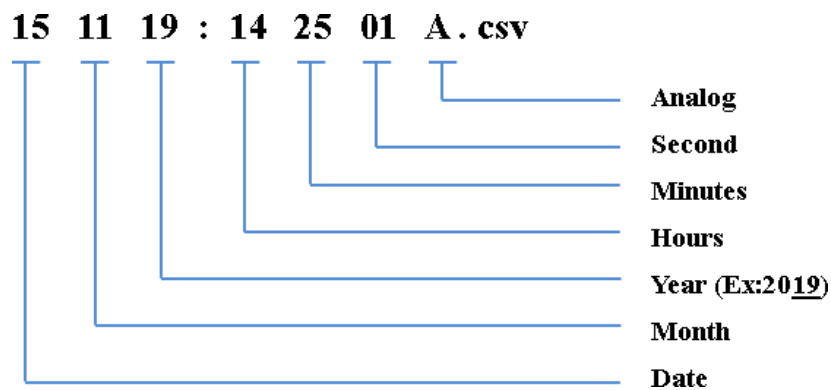
151119:142501D.csv



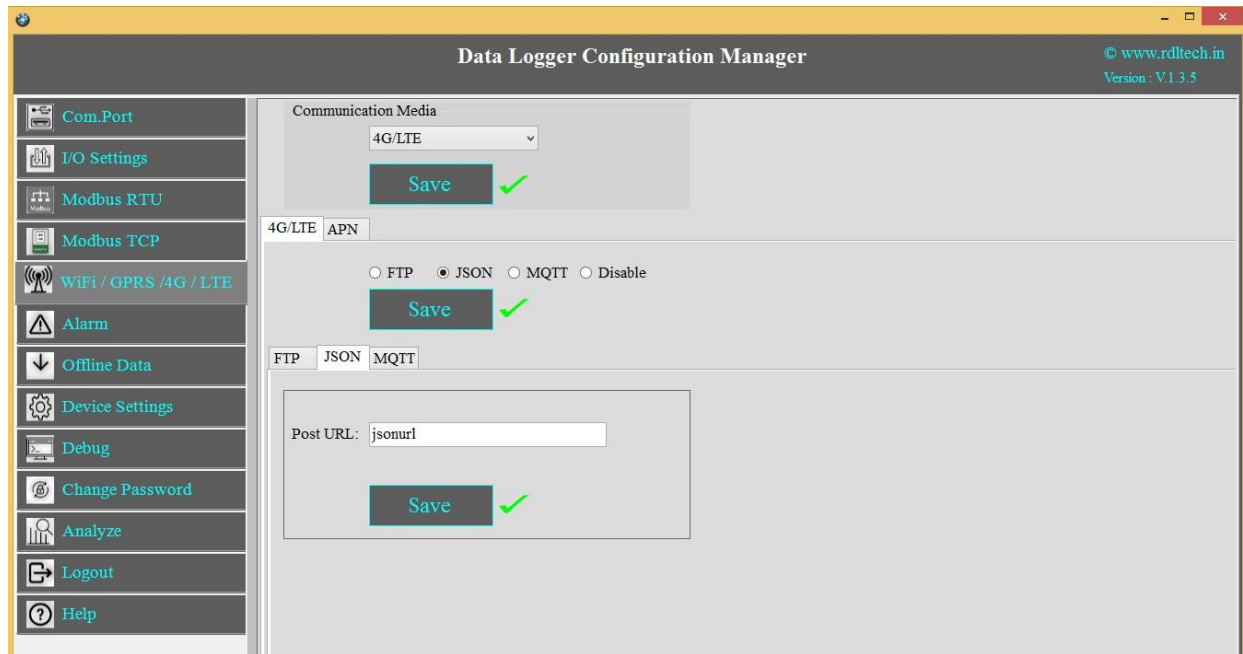
8.2.4 Analog Input Data Uploading Format

File uploading format for given date 15/11/2019 will be

151119:142501A.csv



8.3 4G/LTE JSON Settings



1. Choose **4G/LTE** in the **Communication Media**. Click on Save.
2. Select the protocol **JSON** and Save.
3. **Post URL:** Provide Server URL.
4. Click on **Save** button to save the above configuration.
5. **APN:** Provide APN for the connection. Click on **Save**.

Ex: for BSNL it is "bsnlnet".

NOTE: JSON implementation guideline document. Please go through the below given link document.

LINK1: <https://github.com/researchdesignlab/Industrial-Data-Logger/blob/master/JSON%20PARSING.pdf>

YouTube Link: <https://www.youtube.com/watch?v=8W-eybka80s>

8.3.1 4G/LTE JSON Data Uploading Format

MODBUS RTU Data Uploading Format:

API FORMAT:

```
{“Type”:”MR”,”ID”:”1235”,”DATE”:”1/11/19”,”TIME”:”12:47:9”,”SL_ID”:”1”,”Reg  
Ad”:”1003”,”Length”:”6”,”D1”:”0”,”D2”:”0”,”D3”:”0”,”D4”:”0”,”D5”:”0”,”D6”:”0”}
```

NOTE: MODBUS RTU/TCP 16bit/32bit data parsed in hex decimal format.

MODBUS TCP Data Uploading Format:

API FORMAT:

```
{“Type”:”MT”,”ID”:”1123”,”DATE”:”4/11/19”,”TIME”:”12:21:21”,”SL_ID”:”1”,”Reg  
Ad”:”1060”,”Length”:”6”,”D1”:”1165”,”D2”:”1166”,”D3”:”1167”,”D4”:”1168”,”D5”:”  
1169”,”D6”:”1170”}
```

NOTE: MODBUS RTU/TCP 16bit/32bit data parsed in hexa decimal format

ANALOG Input Data Uploading Format:

API FORMAT:

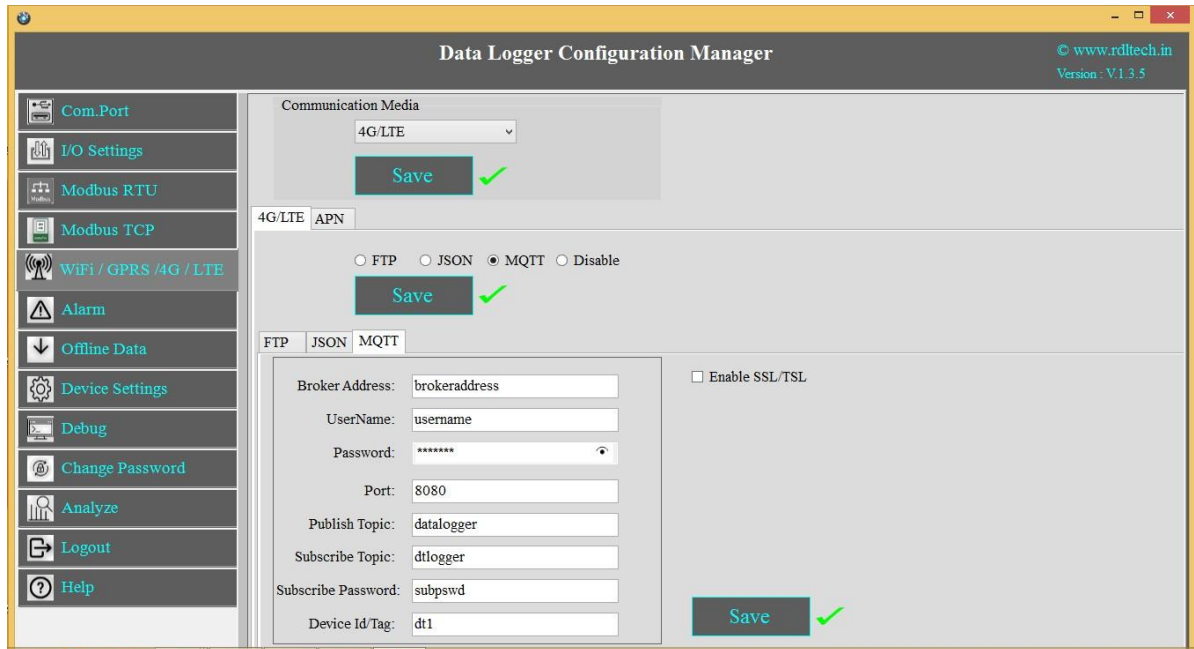
```
{"Type": "AN", "ID": "6549", "DATE": "18/08/21", "TIME": "15:54:43", "AC1": "0.00", "AC2": "0.00", "AC3": "0.00", "AC4": "0.00", "AC5": "0.00", "AC6": "0.00", "AC7": "0.00", "AC8": "0.00", "AC9": "0.00", "AC10": "0.00", "AC11": "0.00", "AC12": "0.00"}
```

Digital Input Data Uploading Format:

API FORMAT:

```
{"Type": "DI", "ID": "1234", "DATE": "2/11/19", "TIME": "12:35:15", "DC1": "0", "DC2": "0", "DC3": "0", "DC4": "0"}
```

8.4 4G/LTE MQTT Settings:



The screenshot shows the 'Data Logger Configuration Manager' window. On the left is a sidebar with various settings categories. The main area is divided into sections for 'Communication Media', '4G/LTE APN', and 'MQTT'. The 'Communication Media' section has a dropdown set to '4G/LTE' and a 'Save' button with a green checkmark. The '4G/LTE APN' section has a text input field and a 'Save' button with a green checkmark. The 'MQTT' section has radio buttons for 'FTP', 'JSON', 'MQTT' (selected), and 'Disable', followed by a 'Save' button with a green checkmark. Below this, there are input fields for 'Broker Address', 'UserName', 'Password', 'Port', 'Publish Topic', 'Subscribe Topic', 'Subscribe Password', and 'Device Id/Tag'. An 'Enable SSL/TSL' checkbox is also present. A 'Save' button with a green checkmark is at the bottom right of the MQTT section.

1. Choose **4G/LTE** in the Communication Media. Click on **Save**.
2. Select the protocol **MQTT** and **Save**.
3. **Broker Address**: Enter your broker address of MQTT
4. **Cloud Username**: Enter MQTT cloud Username.
5. **Password**: Enter MQTT cloud Password.
6. **Port**: Enter Port number for MQTT cloud.
7. **Publish Topic**: Enter Topic name to publish the data to server
8. **Subscribe Topic**: To receive the data from the server
9. **Device Id/Tag**: Enter the Device ID
10. Click on **Save** will save these settings in the memory.
11. **APN**: Enter APN for the connection. Ex: for BSNL it is "bsnlnet".
12. Click on **Save**.

NOTE: MQTT Broker creating guideline document. Please go through the below given link document.

LINK 1:https://github.com/researchdesignlab/Industrial-Data-Logger/blob/master/MQTT_Linux_Bringup_ver1.0.pdf

LINK 2: <https://www.cloudmqtt.com/docs/index.html>

YouTube Link: <https://www.youtube.com/watch?v=qNFmfBpNMsg&t=3s>

8.4.1 4G/LTE MQTT Data Parsing Format:

MODBUS RTU Data Parsing Format:

Parsing Format:

```
{“Type”:”MR”,”ID”:”1235”,”DATE”:”1/11/19”,”TIME”:”12:47:9”,”SL_ID” :”1”,”Reg  
Ad”:”1003”,”Length”:”6”,”D1”:”0”,”D2”:”0”,”D3”:”0”,”D4”:”0”,”D5”:”0”,”D6”:”0”}
```

NOTE: MODBUS RTU/TCP 16bit/32bit data parsed in hexadecimal format

MODBUS TCP Data Parsing Format:

Parsing Format:

```
{“Type”:”MT”,”ID”:”1123”,”DATE”:”4/11/19”,”TIME”:”12:21:21”,”SL_ID” :”1”,”Reg  
Ad”:”1060”,”Length”:”6”,”D1”:”1165”,”D2”:”1166”,”D3”:”1167”,”D4”:”1168”,”D5”:”1  
169”,”D6”:”1170”}
```

NOTE: MODBUS RTU/TCP 16bit/32bit data parsed in hexadecimal format

ANALOG Input Data Parsing Format:

Parsing Format:

```
{"Type": "AN", "ID": "6549", "DATE": "18/08/21", "TIME": "15:54:43", "AC1": "0.00", "AC2": "0.00", "AC3": "0.00", "AC4": "0.00", "AC5": "0.00", "AC6": "0.00", "AC7": "0.00", "AC8": "0.00", "AC9": "0.00", "AC10": "0.00", "AC11": "0.00", "AC12": "0.00"}
```

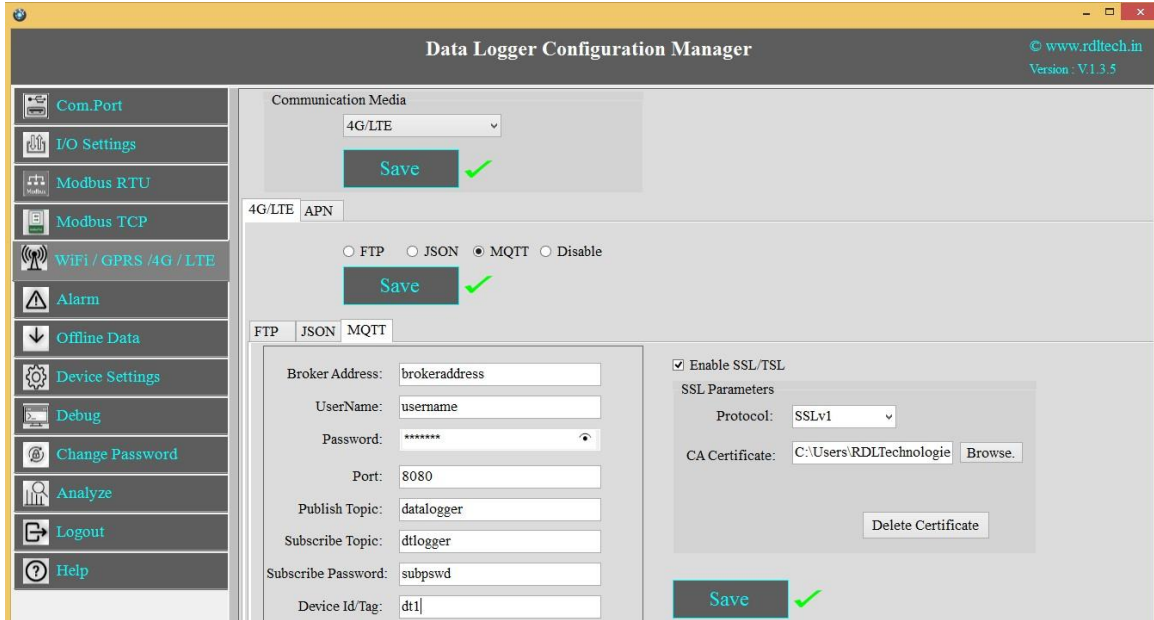
NOTE: For Analog Input configuration look into the section 2.2 in this document

Digital Input Data Parsing Format:

Parsing Format:

```
{"Type": "DI", "ID": "1234", "DATE": "2/11/19", "TIME": "12:35:15", "DC1": "0", "DC2": "0", "DC3": "0", "DC4": "0"}
```

8.5 4G/LTE MQTT with SSL Settings



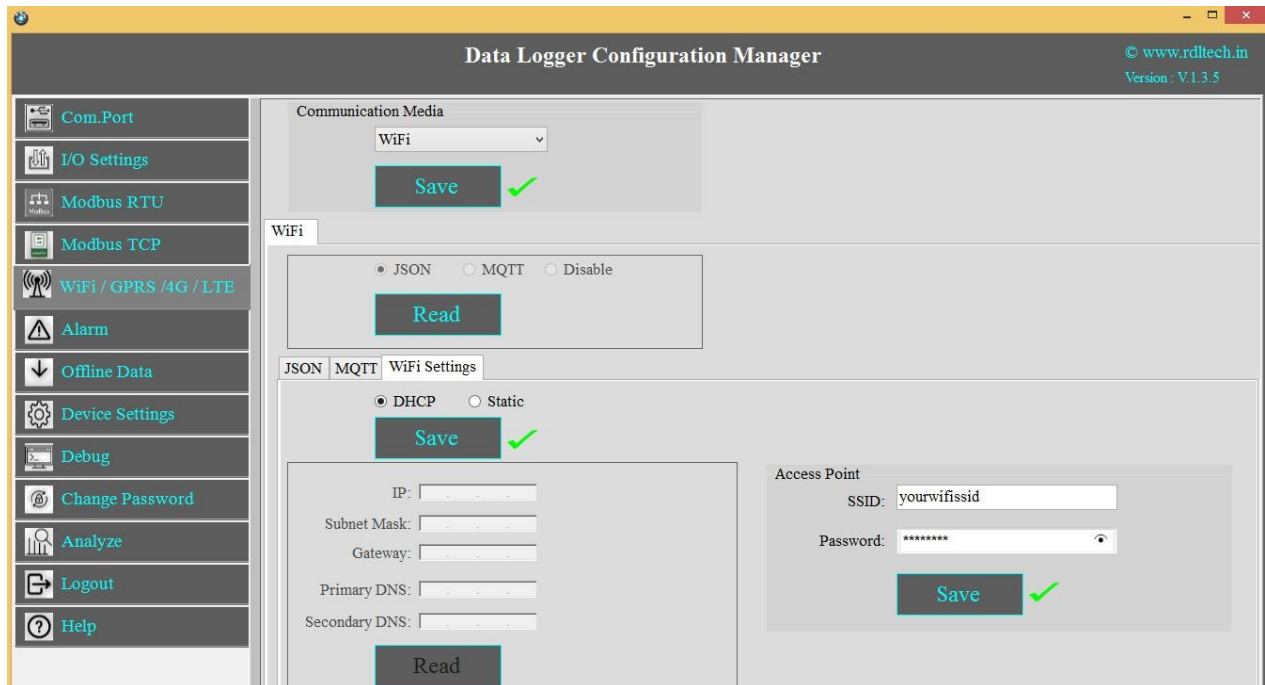
The screenshot shows the 'Data Logger Configuration Manager' window. On the left is a sidebar with various configuration options. The main area is divided into sections for 'Communication Media', '4G/LTE', and 'MQTT'. The 'Communication Media' section has a dropdown set to '4G/LTE' and a 'Save' button. The '4G/LTE' section has an 'APN' field and a 'Save' button. The 'MQTT' section has fields for 'Broker Address', 'UserName', 'Password', 'Port', 'Publish Topic', 'Subscribe Topic', 'Subscribe Password', and 'Device Id/Tag'. There is also a checkbox for 'Enable SSL/TSL' and a section for 'SSL Parameters' with a 'Protocol' dropdown, 'CA Certificate' field, and a 'Delete Certificate' button. All 'Save' buttons have a green checkmark next to them.

1. Choose **4G/LTE** in the **Communication Media**. Click on Save.
2. **Select the protocol MQTT and Save.**
3. **Broker Address:** Enter your broker address of MQTT
4. **Cloud Username:** Enter MQTT cloud User Name.
5. **Password:** Enter MQTT cloud Password.
6. **Port:** Enter Port number for MQTT cloud.
7. **Publish Topic:** Enter Topic name to publish the data to server
8. **Subscribe Topic:** To receive the data from the server
9. **Device Id/Tag:** Provide the Device ID
10. Click on **Enable SSL/TSL and** set the **SSL Parameters**.
11. **Protocol:** Select in the dropdown which protocol you are using.
12. **CA Certificate:** Please upload the CA Certificate.
13. Click on **Save** button to save the above configuration.
14. Click on Delete Certificate to delete the uploaded Certificate.
15. **APN:** Provide APN for the connection. Ex: for BSNL ->"bsnlnet".Click on Apply.

NOTE: Make sure that power supply connected during the process of uploading the SSL certificate

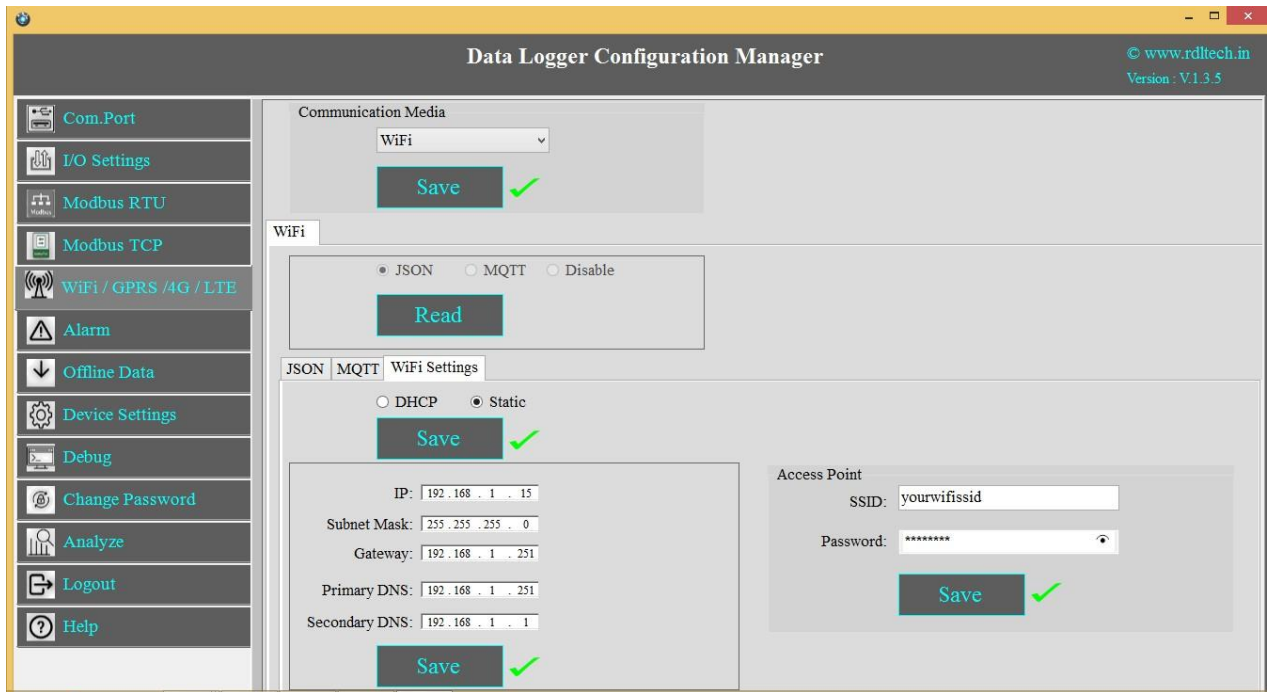
9. Wi-Fi Settings

9.1 Wi-Fi DHCP Settings



1. Choose **Wi-Fi** in the **Communication Media**. Click on **Save**.
2. **Wi-Fi Settings** are enabled now.
3. Select protocol **MQTT/JSON** and click on **Save** button.
4. Wi-Fi Settings: Select **DHCP**. Click on **Apply**.
5. **Access Point**: Set the SSID and Password
6. Click on **Save** button to save these settings in the memory.

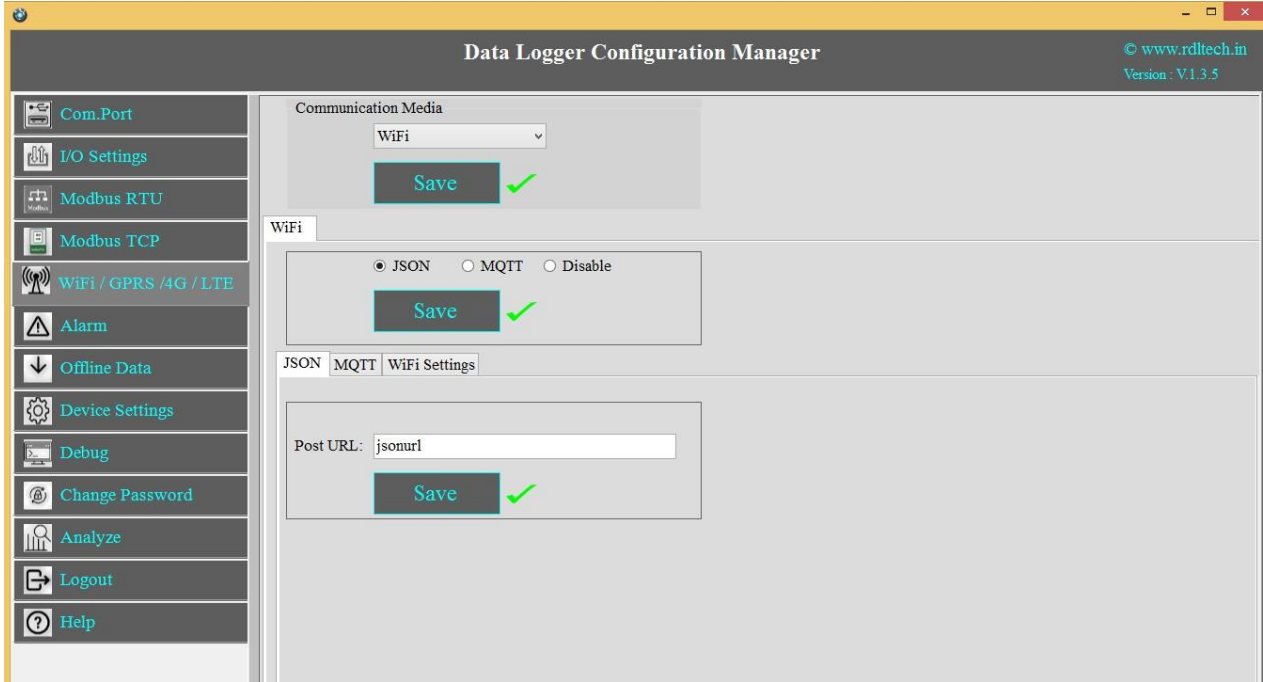
92 Wi-Fi Static Settings



The screenshot shows the 'Data Logger Configuration Manager' application window. On the left is a sidebar menu with options: Com.Port, I/O Settings, Modbus RTU, Modbus TCP, WiFi / GPRS / 4G / LTE (selected), Alarm, Offline Data, Device Settings, Debug, Change Password, Analyze, Logout, and Help. The main area is titled 'Communication Media' and has a dropdown menu set to 'WiFi'. Below this is a 'Save' button with a green checkmark. The 'WiFi' section has three radio buttons: 'JSON' (selected), 'MQTT', and 'Disable'. Below these is a 'Read' button. The 'JSON' section is active, showing 'WiFi Settings' with 'DHCP' and 'Static' radio buttons; 'Static' is selected. Below these are input fields for IP (192.168.1.15), Subnet Mask (255.255.255.0), Gateway (192.168.1.251), Primary DNS (192.168.1.251), and Secondary DNS (192.168.1.1), followed by a 'Save' button with a green checkmark. The 'Access Point' section has input fields for SSID (yourwifissid) and Password (masked with asterisks), followed by a 'Save' button with a green checkmark. The top right corner of the window shows '© www.rdltech.in' and 'Version : V.1.3.5'.

1. Choose **Wi-Fi** in the **Communication Media**. Click on **Save**.
2. Select the protocol **JSON**
3. **Wi-Fi Settings**: Select **Static**. Click on **Apply**.
4. Enter the IP, Subnet Mask, Gateway, Primary DNS, Secondary DNS and click on **Save**.
5. **Access Point**: Set the **SSID** and **Password**, Click on **Save** button.

93 Wi-Fi JSON Settings



The screenshot shows the 'Data Logger Configuration Manager' application window. On the left is a sidebar menu with options: Com.Port, I/O Settings, Modbus RTU, Modbus TCP, Wi-Fi / GPRS / 4G / LTE (selected), Alarm, Offline Data, Device Settings, Debug, Change Password, Analyze, Logout, and Help. The main area is titled 'Data Logger Configuration Manager' and includes a version string '© www.rdltech.in Version : V1.3.5'. It features three configuration sections: 'Communication Media' with a 'WiFi' dropdown and a 'Save' button; 'WiFi' with radio buttons for 'JSON' (selected), 'MQTT', and 'Disable', and a 'Save' button; and 'JSON' with a 'Post URL' field containing 'jsonurl' and a 'Save' button. All 'Save' buttons are accompanied by a green checkmark icon.

1. Choose **Wi-Fi** in the **Communication Media**. Click on Save.
2. **Wi-Fi Settings**: Select the protocol **JSON** and Save.
3. **Post URL**: Provide Server URL.
4. Click on **Save** button to save the above configuration.

9.3.1 Wi-Fi JSON Data Uploading Format

MODBUS RTU Data Uploading Format

API FORMAT:

```
{“Type”:”MR”,”ID”:”1235”,”DATE”:”1/11/19”,”TIME”:”12:47:9”,”SL_ID” :”1”,”Reg  
Ad”:”1003”,”Length”:”6”,”D1”:”0”,”D2”:”0”,”D3”:”0”,”D4”:”0”,”D5”:”0”,”D6”:”0”}
```

NOTE: MODBUS RTU/TCP 16bit/32bit data parsed in hexadecimal format

MODBUS TCP Data Uploading Format

API FORMAT:

```
{“Type”:”MT”,”ID”:”1234”,”DATE”:”4/11/19”,”TIME”:”12:21:21”,”SL_ID” :”1”,”Reg  
Ad”:”1060”,”Length”:”6”,”D1”:”1165”,”D2”:”1166”,”D3”:”1167”,”D4”:”1168”,”D5”:”1  
169”,”D6”:”1170”}
```

NOTE: MODBUS RTU/TCP 16bit/32bit data parsed in hexadecimal format

Analog Input Data Uploading Format

API Format:

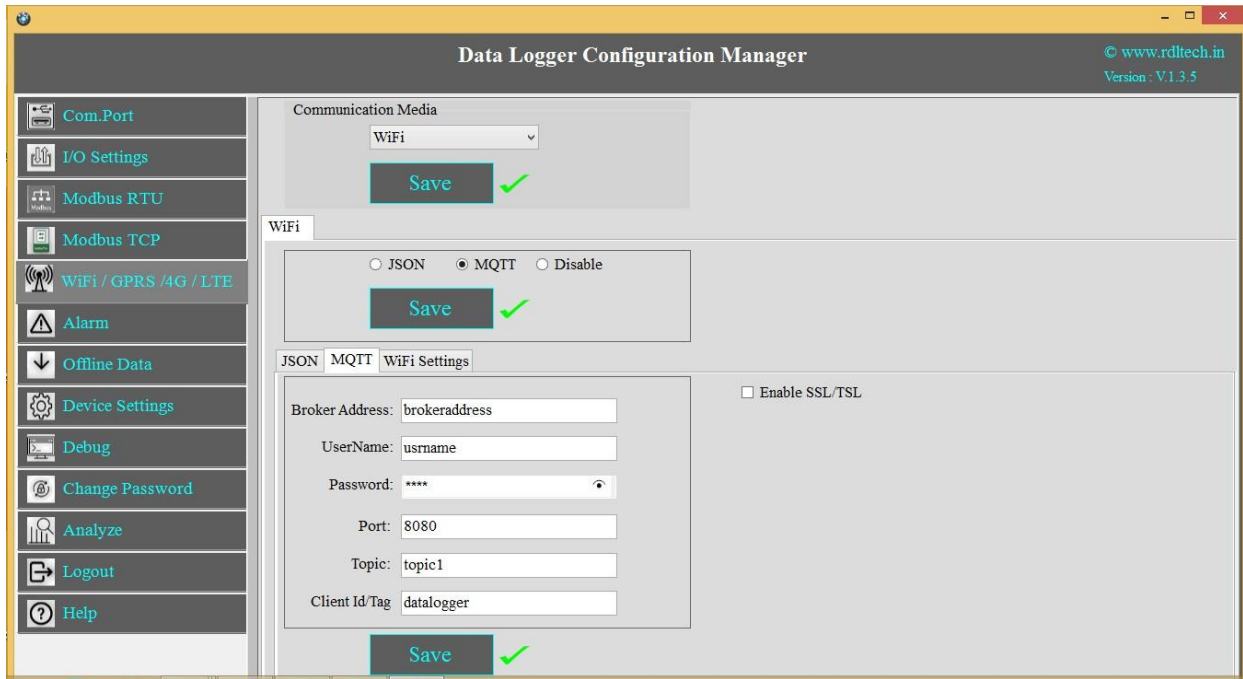
```
{"Type":"AN","ID":"6549","DATE":"18/08/21","TIME":"15:54:43","AC1":"0.00","AC2":"0.00","AC3":"0.00","AC4":"0.00","AC5":"0.00","AC6":"0.00","AC7":"0.00","AC8":"0.00","AC9":"0.00","AC10":"0.00","AC11":"0.00","AC12":"0.00"}
```

Digital Input Data Uploading Format

API Format:

```
{"Type":"DI","ID":"1234","DATE":"2/11/19","TIME":"12:35:15","DC1":"0","DC2":"0","DC3":"0","DC4":"0"}
```

94 Wi-Fi MQTT Settings



The screenshot shows the 'Data Logger Configuration Manager' application window. On the left is a sidebar menu with options: Com.Port, I/O Settings, Modbus RTU, Modbus TCP, WiFi / GPRS / 4G / LTE (highlighted), Alarm, Offline Data, Device Settings, Debug, Change Password, Analyze, Logout, and Help. The main area is titled 'Communication Media' and has a dropdown menu set to 'WiFi'. Below this is a 'Save' button with a green checkmark. Underneath is a 'WiFi' section with radio buttons for 'JSON', 'MQTT' (selected), and 'Disable', followed by another 'Save' button with a green checkmark. At the bottom is a 'WiFi Settings' section with tabs for 'JSON', 'MQTT', and 'WiFi Settings' (selected). It contains input fields for 'Broker Address' (placeholder: brokeraddress), 'UserName' (placeholder: username), 'Password' (masked with ****), 'Port' (placeholder: 8080), 'Topic' (placeholder: topic1), and 'Client Id/Tag' (placeholder: datalogger). There is also an unchecked checkbox for 'Enable SSL/TSL' and a final 'Save' button with a green checkmark.

1. Choose **Wi-Fi** in the **Communication Media**. Click on **Save**.
2. **Wi-Fi Settings** are enabled now, ready for **MQTT**
3. **MQTT**: Data logging happens to MQTT server. Click on Save.
4. **Broker Address**: Provide your broker address of MQTT
5. **Cloud Username**: Provide MQTT cloud Username.
6. **Password**: Provide MQTT cloud Password.
7. **Port**: Provide Port number for MQTT cloud.
8. **Topic**: Provide Topic name.
9. **Device Id/Tag**: Provide the Device ID
10. Click on **Save** button to save the above configuration.

9.4.1 Wi-Fi MQTT Data Parsing Format:

MODBUS RTU Data Parsing Format:

Parsing Format:

```
{“Type”:”MR”,”ID”:”1235”,”DATE”:”1/11/19”,”TIME”:”12:47:9”,”SL_ID”:”1”,”Reg  
Ad”:”1003”,”Length”:”6”,”D1”:”0”,”D2”:”0”,”D3”:”0”,”D4”:”0”,”D5”:”0”,”D6”:”0”}
```

NOTE: MODBUS RTU/TCP 16bit/32bit data parsed in hexadecimal format

MODBUS TCP Data Parsing Format

Parsing Format:

```
{“Type”:”MT”,”ID”:”1123”,”DATE”:”4/11/19”,”TIME”:”12:21:21”,”SL_ID”:”1”,”Reg  
Ad”:”1060”,”Length”:”6”,”D1”:”1165”,”D2”:”1166”,”D3”:”1167”,”D4”:”1168”,”D5”:”1  
169”,”D6”:”1170”}
```

NOTE: MODBUS RTU/TCP 16bit/32bit data parsed in hexadecimal format

Analog Input Data Parsing Format:

Parsing Format:

```
{"Type": "AN", "ID": "6549", "DATE": "18/08/21", "TIME": "15:54:43", "AC1": "0.00", "AC2": "0.00", "AC3": "0.00", "AC4": "0.00", "AC5": "0.00", "AC6": "0.00", "AC7": "0.00", "AC8": "0.00", "AC9": "0.00", "AC10": "0.00", "AC11": "0.00", "AC12": "0.00"}
```

Digital Input Data Parsing Format:

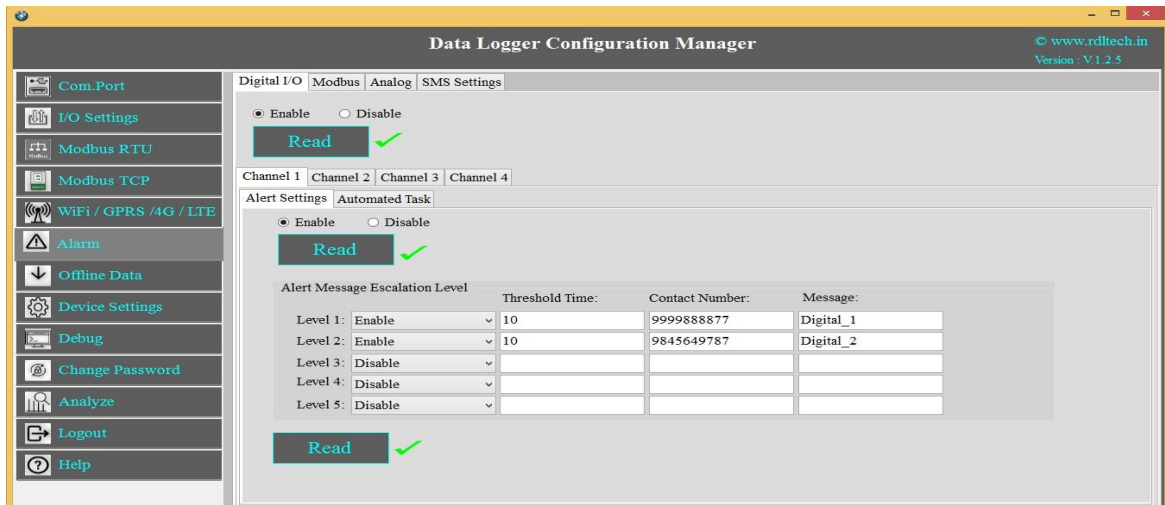
Parsing Format:

```
{"Type": "DI", "ID": "1234", "DATE": "2/11/19", "TIME": "12:35:15", "DC1": "0", "DC2": "0", "DC3": "0", "DC4": "0"}
```


10. Alarm

Device sends emergency alerts and different Escalation level SMS to the remote user on real time basis. Device also supports Automating the remote asset based on set threshold. Alarm can be applied for Digital, Analog and Modbus Inputs.

Setting up Alarm for Digital Input:



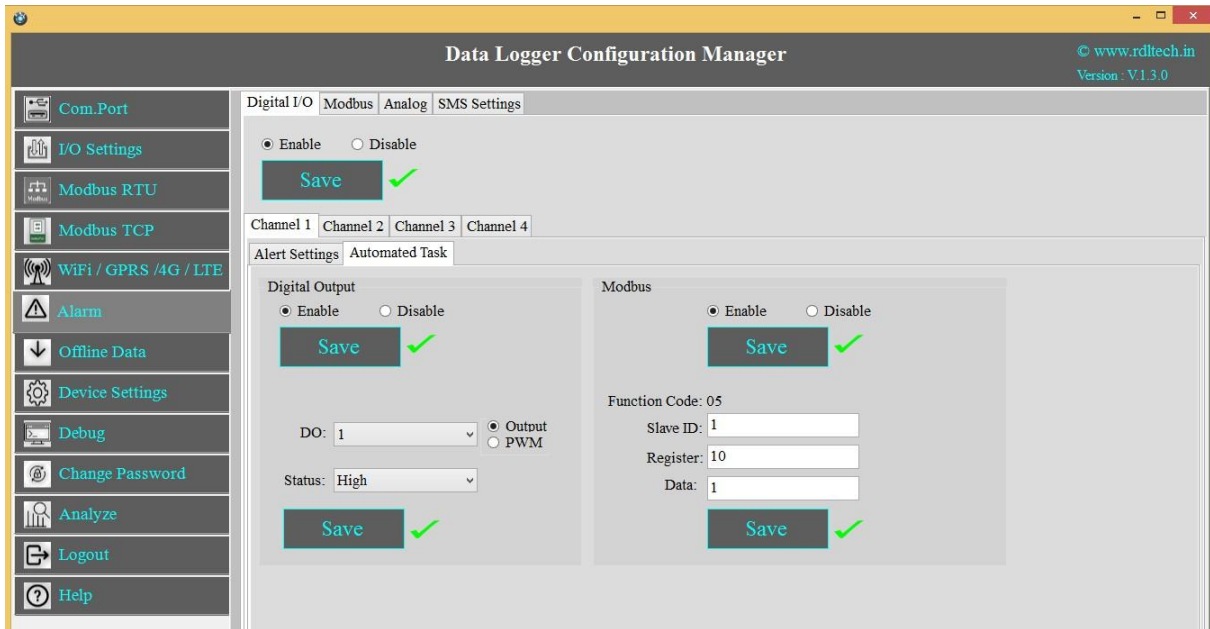
The screenshot shows the 'Data Logger Configuration Manager' software interface. The 'Digital I/O' tab is selected. Under 'Digital I/O', the 'Enable' radio button is selected, and a green checkmark is next to the 'Read' button. Below this, the 'Alert Settings' tab is selected for 'Channel 1'. The 'Enable' radio button is selected, and a green checkmark is next to the 'Read' button. The 'Alert Message Escalation Level' table is visible, showing levels 1 through 5. Levels 1 and 2 are enabled, while levels 3, 4, and 5 are disabled. The 'Threshold Time' is set to 10 for levels 1 and 2. The 'Contact Number' and 'Message' fields are populated for levels 1 and 2.

Alert Message Escalation Level	Threshold Time:	Contact Number:	Message:
Level 1: Enable	10	9999888877	Digital_1
Level 2: Enable	10	9845649787	Digital_2
Level 3: Disable			
Level 4: Disable			
Level 5: Disable			

- 1) Enable Digital I/O and Click on Save button.
- 2) Click on Channel 1 and select Alert Settings tab and Enable it and then Save.
- 3) Alert Message Escalation Level, enable the Levels, set the Threshold Time, enter the contact number and write the alert message to be sent and click on Save button.
- 4) Maximum 5 phone numbers and maximum 25 character length alert messages can be registered.

NOTE: If digital Input is triggered then send a configured message to the configured number based on threshold time priority.

Automated Digital I/O Alarm Task:



Case 1: Automate Task when Digital Input Channel 1 goes High, make the Digital Output Channel High.

To do the above task, follow the below given steps:

- 1) Click on Channel 1.
- 2) Click on Automated Task tab and enable the Digital Output and Save.
- 3) Select the Digital Output Channel
- 4) Make the bit status High/Low.
- 5) Click on **Save** button to save the above configuration.

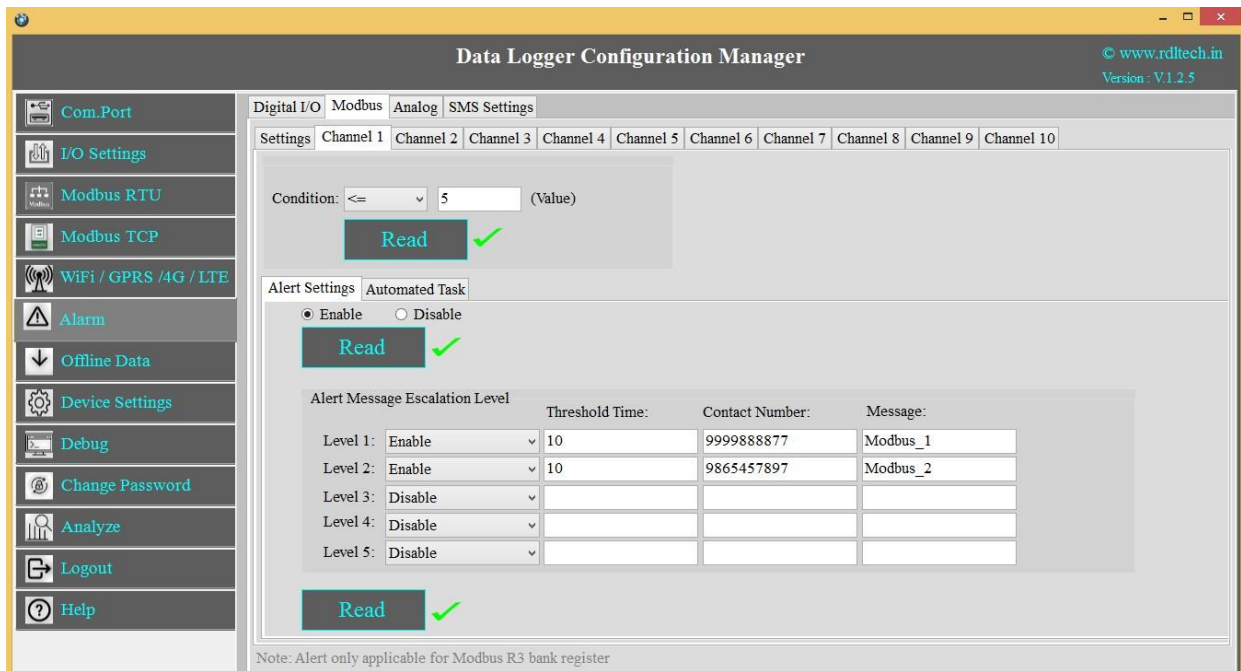
Case 2: Automate Task when Digital Input Channel 1 goes High ,write data to slave ID 1 and register ID 10.

To do the above task, follow the below given steps:

- 1) Click on Channel 1.
- 2) Click on Automated Task tab and enable the Digital Output and Save.
- 3) Select the Digital Output Channel

- 4) Make the bit status High/Low.
- 5) Enable the MODBUS and Click on Save button.
- 6) Enter the Slave ID, Register address and Data.
- 7) Click on **Save** button to save the above configuration.

Setting up Alarm for MODBUS:



The screenshot shows the 'Data Logger Configuration Manager' software interface. The 'Modbus' tab is selected under 'Digital I/O'. The 'Alert Settings' sub-tab is active. The 'Condition' is set to '<=' with a value of '5'. The 'Alert Settings' section has 'Enable' selected. Below this is a table for 'Alert Message Escalation Level' with 5 levels. Levels 1 and 2 are enabled, while levels 3, 4, and 5 are disabled. Each level has a 'Threshold Time', 'Contact Number', and 'Message' field. A 'Read' button with a green checkmark is visible at the bottom of the configuration area.

Alert Message Escalation Level	Threshold Time:	Contact Number:	Message:
Level 1: Enable	10	9999888877	Modbus_1
Level 2: Enable	10	9865457897	Modbus_2
Level 3: Disable			
Level 4: Disable			
Level 5: Disable			

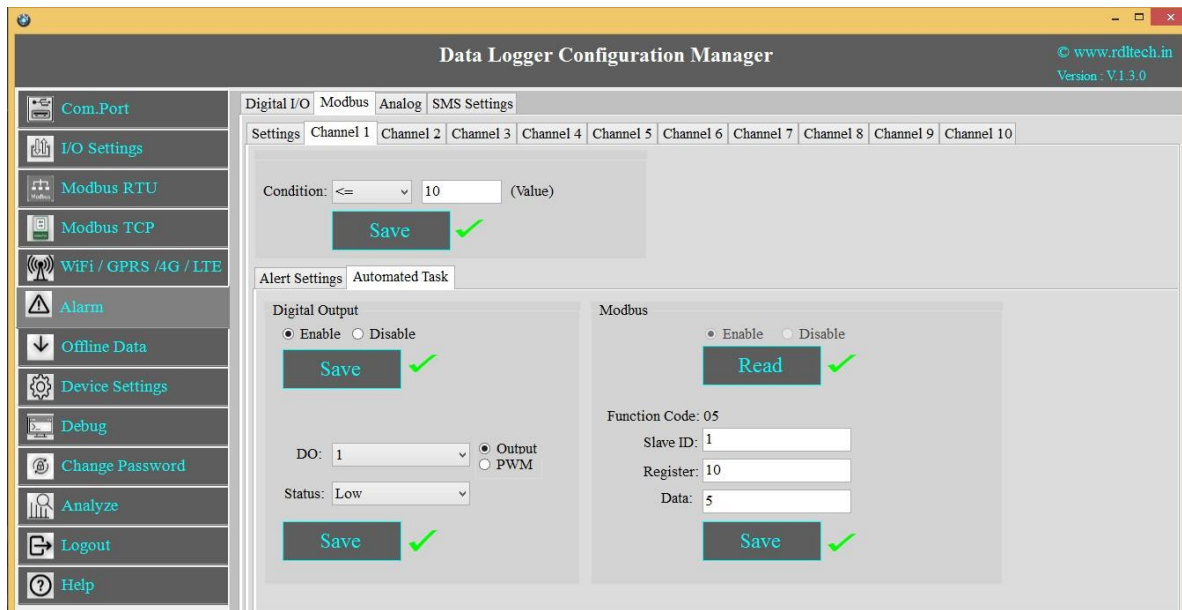
Note: Alert only applicable for Modbus R3 bank register

- 1) Select MODBUS, Click on Channel 1 and select Alert Settings tab and Enable it and then Save.
- 2) Alert Message Escalation Level, enable the Levels, set the Threshold Time, enter the contact number and write the alert message to be sent and click on Save button.
- 3) Maximum 5 phone numbers and maximum 25 character length alert messages can be registered.

NOTE: MODBUS Alarm is linked to MODBUS Register Bank R3.

MODBUS Register Bank R3 set slave received value match with an alarm registered condition and value, if the condition is successful, then send a configured message to the configured number based on threshold time and escalation priority.

Automated MODBUS Alarm Task:



Case 1: Automate Task when MODBUS Channel 1 goes High, make Digital Output Channel High.

To do the above task, follow the below given steps:

- 1) Click on Channel 1 and select Automated Task tab and Enable it and then Save.
- 2) Select the Digital Output Channel
- 3) Make the bit status High/Low.
- 4) Click on **Save** button to save the above configuration.

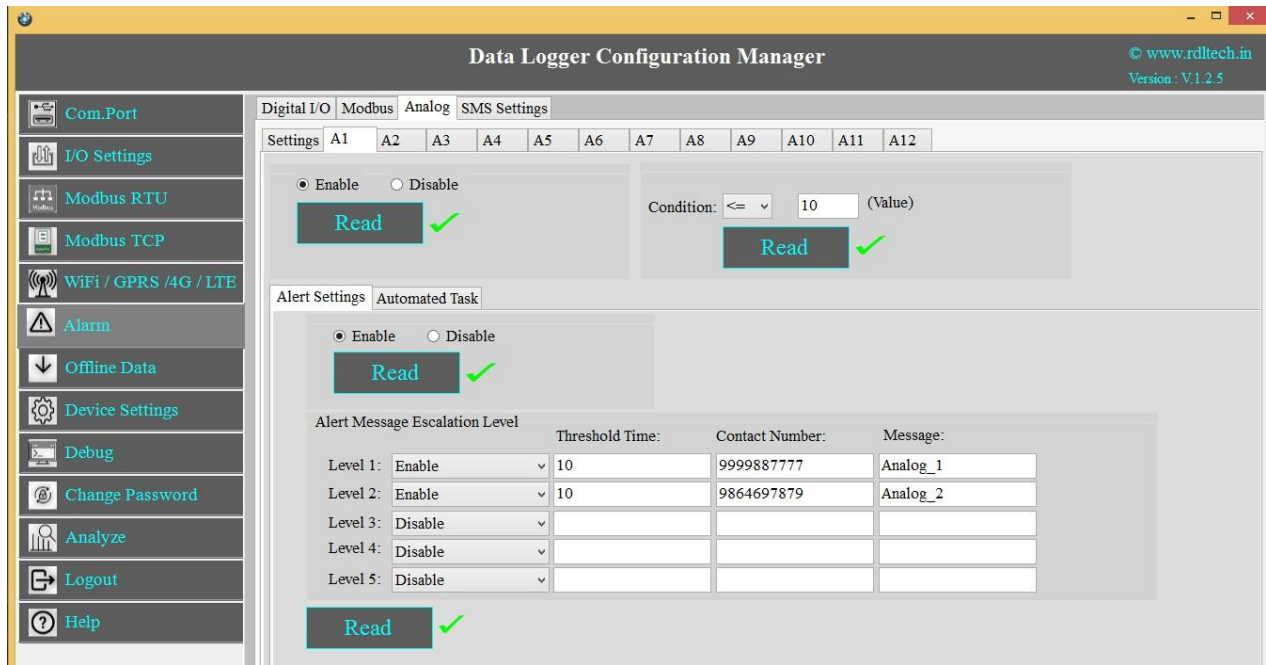
Case 2: Automate Task when MODBUS Input Channel 1 goes High , write data to slave ID 1 and register ID 10.

To do the above task, follow the below given steps:

- 1) Click on Channel 1 and select Automated Task and Enable it and then Save
- 2) Select the Digital Output Channel
- 3) Make the bit status High/Low.
- 4) Enable the MODBUS and Click on Save button.

- 5) Enter the Slave ID, Register address and Data.
- 6) Click on **Save** button to save the above configuration.

Setting up Alarm for Analog:



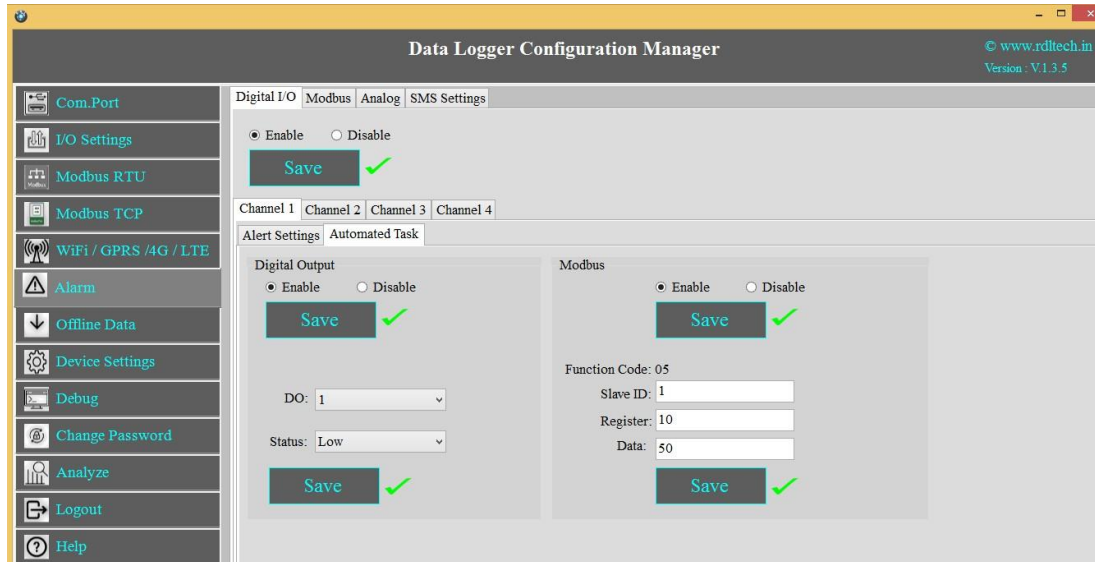
The screenshot shows the 'Data Logger Configuration Manager' software interface. The 'Analog' tab is selected under the 'Settings' section, showing channels A1 through A12. The 'Alert Settings' tab is also visible, showing options to enable or disable alerts, a condition dropdown set to '<= 10', and a table for 'Alert Message Escalation Level' with columns for Level, Threshold Time, Contact Number, and Message.

Alert Message Escalation Level	Threshold Time:	Contact Number:	Message:
Level 1: Enable	10	9999887777	Analog_1
Level 2: Enable	10	9864697879	Analog_2
Level 3: Disable			
Level 4: Disable			
Level 5: Disable			

- 1) Click on Analog and select the Channels (A1-A12) and Click on Enable and Save.
- 2) Select Alert Settings tab and Enable it and then Save
- 3) Alert Message Escalation Level, enable the Levels, set the Threshold Time, enter the contact number and write the alert message to be sent and click on Save button.
- 4) Maximum 5 phone numbers and maximum 25 character length alert messages can be registered.

NOTE: Analog value, match with an alarm registered condition and value, if the condition is successful, then send a configured message to the configured number based on threshold time priority.

Automated MODBUS Alarm Task:



Case 1: Automate Task when Analog Channel 1 goes High, make Digital Output Channel High.

To do the above task, follow the below given steps:

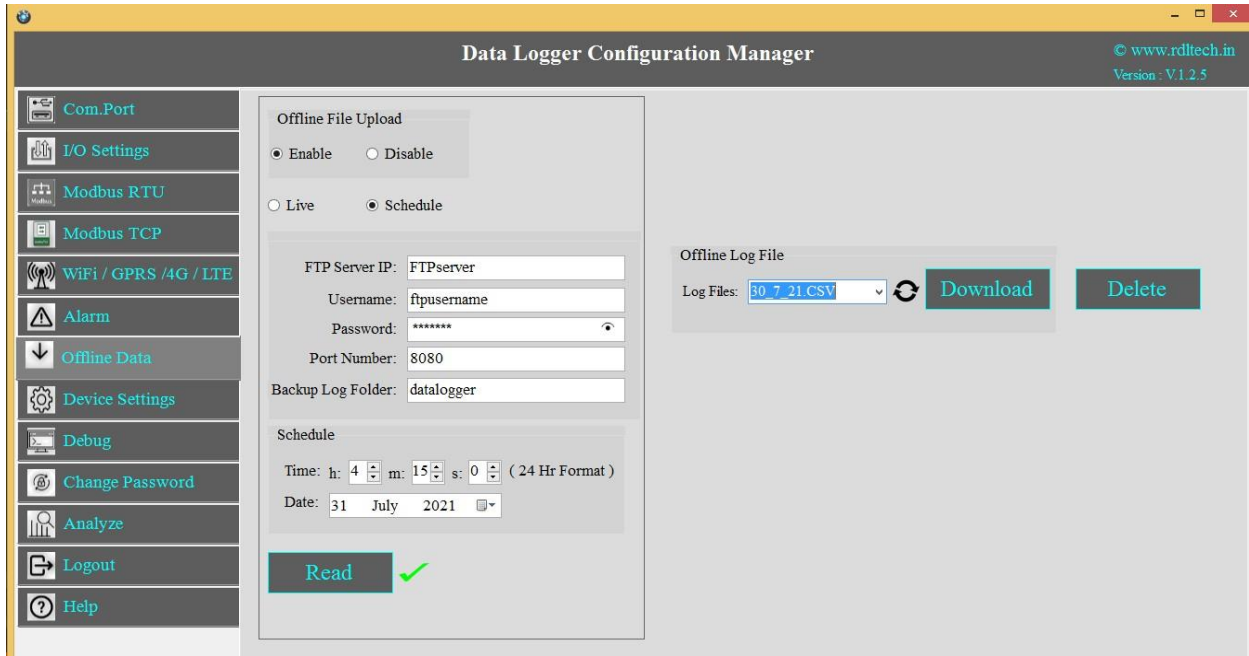
- 1) Click on Channel 1 and select Automated Task tab and Enable it and then Save
- 2) Select the Digital Output Channel
- 3) Make the bit status High/Low.
- 4) Click on **Save** button to save the above configuration.

Case 2: Automate Task when Analog Input Channel 1 goes High, write data to slave ID 1 and Register ID 10.

To do the above task, follow the below given steps:

- 1) Click on Channel 1 and select Automated Task tab and Enable it and then Save.
- 2) Select the Digital Output Channel
- 3) Make the bit status High/Low.
- 4) Enable the MODBUS and Click on Save button.
- 5) Enter the Slave ID, Register address and Data and Save it.

11. Offline Data



The screenshot shows the 'Data Logger Configuration Manager' window. On the left is a sidebar with navigation options: Com.Port, I/O Settings, Modbus RTU, Modbus TCP, WiFi / GPRS / 4G / LTE, Alarm, Offline Data (highlighted), Device Settings, Debug, Change Password, Analyze, Logout, and Help. The main area is titled 'Offline File Upload' and contains the following settings:

- Offline File Upload:** Radio buttons for 'Enable' (selected) and 'Disable'.
- Live/Schedule:** Radio buttons for 'Live' and 'Schedule' (selected).
- FTP Details:**
 - FTP Server IP: FTPserver
 - Username: ftpusername
 - Password: *****
 - Port Number: 8080
 - Backup Log Folder: datalogger
- Schedule:**
 - Time: h: 4, m: 15, s: 0 (24 Hr Format)
 - Date: 31 July 2021
- Offline Log File:**
 - Log Files: 30_7_21.CSV (dropdown menu)
 - Buttons: Download, Delete
- Action:** A 'Read' button with a green checkmark icon.

1. **Enable:** Select enable to upload the file offline/when there is no internet connectivity.
2. Select radio button to Enable/Disable offline file
3. **Live:** Offline data sent to a configured server after receiving an internet connection.
4. **Schedule:** Offline data is stored in the “jsn_bup.txt” file. That file is sent to the Configured FTP Server at configured time.
5. **FTP Details:** Enter the FTP Server IP , Username, Password and the Port Number
6. Click on Save button.
7. **Backup Log Folder:** Enter FTP server folder name(In case of multiple folder enter folder name with path)
8. **Schedule:** Set the Time and Date for offline data FTP poll.
9. **Offline Log Data:**

Log Files: You can select the .CSV files

Download: You can select the Log files from the Dropdown and Click on Download.

Delete: You can select the Log files which you want to delete from the Dropdown and click on Delete.

12. Device Settings



Com.Port

I/O Settings

Modbus RTU

Modbus TCP

WiFi / GPRS / 4G / LTE

Alarm

Offline Data

Device Settings

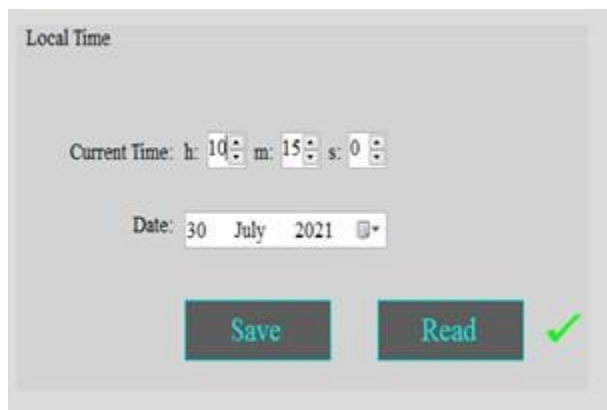
Device Id: 6549

Save Read ✓

☒ Enable Debug

Read ✓

1. Set the Device Id and click on Save
2. Click on **Read** to display the configuration that is already saved.
3. Select the **Enable Debug** and click on Save.



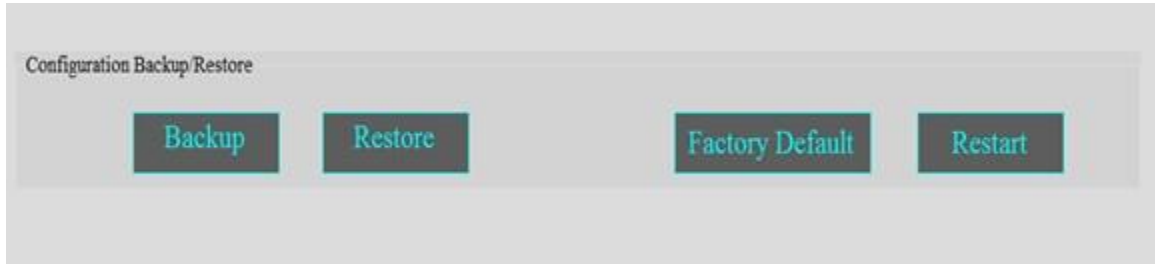
Local Time

Current Time: h: 10 m: 15 s: 0

Date: 30 July 2021

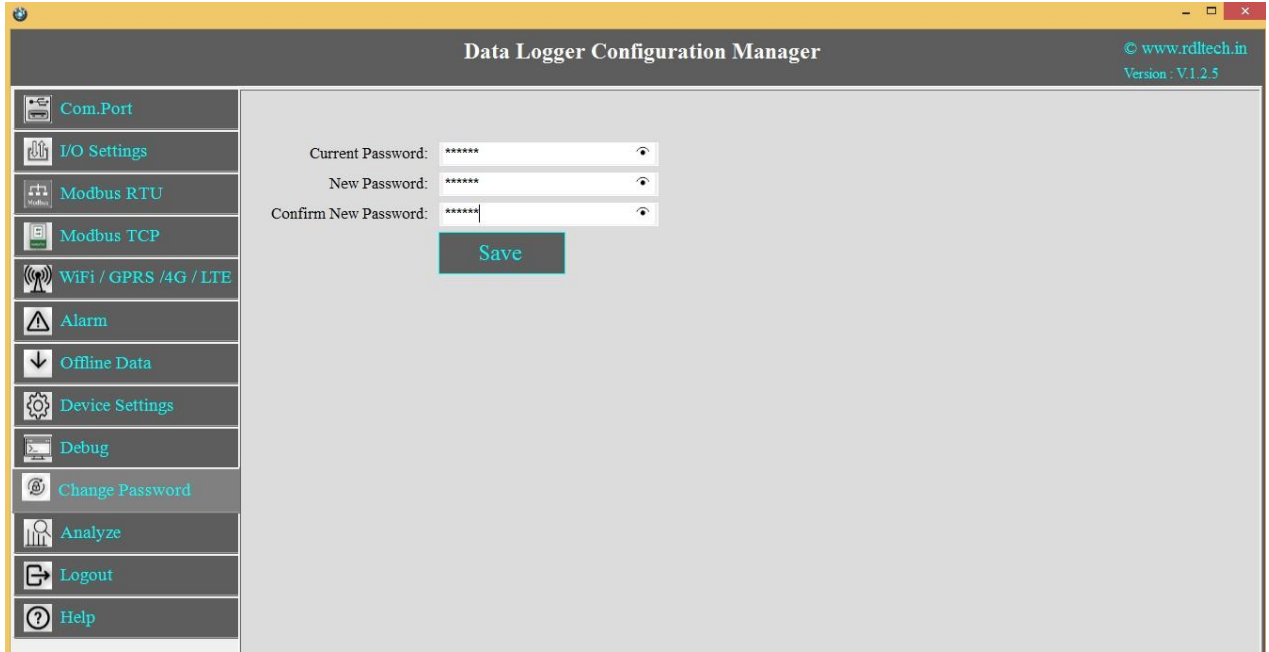
Save Read ✓

1. Set the device **Current time** in hour, minute and seconds.
2. **Date:** Select the date from the drop down menu.
3. Click on Save to save the above configuration.



1. Click on **Backup** to take the entire data logger configuration backup.
2. Click on **Restore** and select the file to restore the data logger Configuration.
3. **Factory Default:** Click on Factory Default to restore the factory default configuration settings.
4. **Restart:** Click on Restart button to restart the Data Logger.

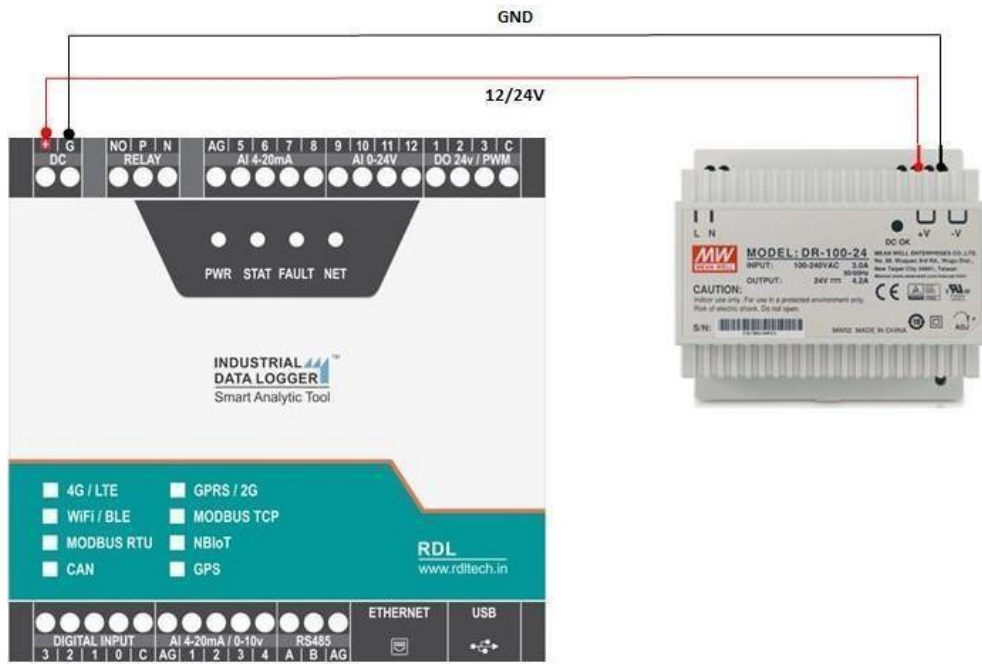
13. Change Password



The screenshot shows the 'Data Logger Configuration Manager' application window. The title bar is yellow with standard window controls. The main header is dark grey with the text 'Data Logger Configuration Manager' and '© www.rdltech.in Version : V.1.2.5' on the right. A vertical sidebar on the left contains icons and labels for various settings: Com.Port, I/O Settings, Modbus RTU, Modbus TCP, WiFi / GPRS / 4G / LTE, Alarm, Offline Data, Device Settings, Debug, Change Password (highlighted), Analyze, Logout, and Help. The main content area is light grey and displays the 'Change Password' form with three input fields: 'Current Password:', 'New Password:', and 'Confirm New Password:'. Each field contains six asterisks and has a toggle icon on the right. A green 'Save' button is positioned below the 'Confirm New Password' field.

You can change the default password by entering the New Password.

14. Power Supply



ATTENTION: Recommended to use Meanwell power supplies of 24V 2A



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