Rev 2018.1O

PR-WS-100-101-102-103-113 Web SCADA device for Modbus RTU, Modbus TCP/IP, BACnet MSTP and BACnet IP with JSON/XML for remote Data Logging & Monitoring

The PG is an embedded remote monitoring and control solution for Modbus RTU, Modbus TCP/IP, BACnet MSTP and BACnet IP devices. This unit can connect with Modbus RTU/BACnet MSTP/Modbus TCP/IP or BACnet IP based field slave devices and present their data on a tabular dashboard for monitoring. It is also possible to send back commands from the dashboard to control the field devices. You can also configure it as protocol converter which can help you to communicate between Modbus RTU, Modbus TCP/IP, BACnet IP and BACnet MSTP (please get in touch with our sales team this is a limited functionality).

The device has an onboard MySQL data base and it is possible to store up to 100,000 values. The stored values can be retrieved in .csv file format. You can mail .csv file on specific mail id. You can upgrade storage from 100,000 to higher.

Hardware Specification:

	PG100	PG300
CPU info	CPU 700 MHz ARM1176JZF-S	CPU 700 MHz ARM1176JZF-S
GPU info	GPU Broadcom VideoCore IV	GPU Broadcom VideoCore IV
RAM	1GB RAM	1GB RAM
Flash	4Gbyte eMMC Flash (Expandable)	4Gbyte eMMC Flash (Expandable)
Power supply		
Supply voltage	8 … 28V DC	15 ... 28V DC
Interfaces		
Ethernet	1 x Ethernet 10/100-Mbit, Auto MDI-MDIX, RJ-45	
RS-232	1 x RS-232 (RXD, TXD, RTS, CTS), DB9 male	1 x RS-232 (RXD, TXD, RTS, CTS), DB9 male
RS-485	1 x RS-485, terminal blocks	1 x RS-485, terminal blocks
Digital Input	8 x Digital Input Opto Isolated 4x Dry Contact Digital Inputs	8 x Digital Input Opto Isolated 4x Dry Contact Digital Inputs
Digital Output	8 x Digital Output (Open Drain)	8 x Digital Output (Open Drain)
Analog Input	-	4 x Analog Input (0-10V)
Analog Output	-	2 x Analog Output (0-10V)
GSM/GPRS	-	1 x 2G Standard SIM Slot
Standards		
EU standard	EN 61326-1:2013	
Environment		
EMC	EN 55011 group 1 class A, EN 55011 group 1 class B	
Operating Temperature	0 °C ~ 50 °C	
Operating Relative Humidity	5 ~ 95%, non-condensing	
Storage Temperature	-25 °C ~ 80 °C	
Protection Rating	IP20	
Dimension	158 x 114 x 59 (L x W x H)	
Mount	Din-rail, wall mount	
Weight	260g	295g

This device can get with added support for JSON/XML and it is possible to post data to a remote server in JSON/XML format.

This solution support connection using HTTPS (SSL/TLS) for secure communication connection.

Connection Type and Strength:

Connector	Maximum Cable Length
Power supply	2 m
USB	3 m
1-wire	3 m
Digital inputs/outputs	3 m
RS-232	15 m
Ethernet	100 m*
RS-485	500 m*

Protocols Information

Database Support:

MySQL: Store and retrieve up to 100,000 data values. You can retrieve values of any specific time stamp out of last 100,000 values and you get in *.CSV format.

Modbus RTU:

Driver Type: Slave/Master

Connection information:

Connection type:	RS-232 or RS-485 (Two wire, Half-Duplex)
Baud Rate:	110 – 115200, standard baud rates only
Data Bits:	7, 8
Parity:	Even, Odd, None
Multidrop Capability:	Yes

Function codes supported:

Function Codes	Description
01	Read Discrete Output Status (0xxxx)
02	Read Discrete Input Status (1xxxx)
03	Read Output Registers (4xxxx)
04	Read Input Registers (3xxxx)
15	Force Multiple Coils (0xxxx)
16	Preset Multiple Registers (4xxxx)

Data Types supported:

Data Type	Comments
Signed	Signed 16-bit integer
Unsigned	Unsigned 16-bit integer
Long	Unsigned 32-bit integer
Long integer swapped	Unsigned 32-bit integer
Single precision Float	32-bit IEEE floating point
Single precision swapped float	32-bit IEEE floating point
Bit	Digital

Modbus TCP/IP:

Driver Type: Client/Server

Connection information:

Connection type:	Internet Protocol (IP)
Ethernet Speeds	10Base-T, 100Base-T

Function codes supported:

Function Codes	Description
01	Read Discrete Output Status (0xxxx)
02	Read Discrete Input Status (1xxxx)
03	Read Output Registers (4xxxx)
04	Read Input Registers (3xxxx)
15	Force Multiple Coils (0xxxx)
16	Preset Multiple Registers (4xxxx)

Data Types supported:

Data Type	Comments
Signed	Signed 16-bit integer
Unsigned	Unsigned 16-bit integer
Long	Unsigned 32-bit integer
Long integer swapped	Unsigned 32-bit integer
Single precision Float	32-bit IEEE floating point
Single precision swapped float	32-bit IEEE floating point
Bit	Digital

BACnet IP:

Driver Type: Client/Server

Connection information:

Connection type:	Internet Protocol (IP)
Ethernet Speeds	10Base-T, 100Base-T
BBMD	Not supported
Foreign Device	Not supported

Data Types Supported:

Function Codes	Description
AI	Analog Input Object
AO	Analog Output Object
AV	Analog Value Object
BI	Binary Input Object
BO	Binary Output Object
BV	Binary Value Object
MI	Multistate Input Object
MO	Multistate Output Object
MV	Multistate Value Object
LSP	Life Safety Point Object
LSZ	Life Safety Zone Object

Read Operations Supported	Properties Supported
Read Property	Present Value
Write Operations Supported	**Properties Supported**
Write Property	Present Value

BACnet MSTP:

Driver Type: Slave/Master

Connection information:

Connection type:	RS-485 (2 wire half-duplex)
Baud rates	9600, 19200, 38400
Parity	Odd, Even, None
Data bits	7,8
Stop bits	1, 2
Multidrop Capability	Yes (When configured as a BACnet master, there is no physical limit to the number of remote BACnet slave devices is supported. When configured as BACnet slave, there is no physical limit to the number of virtual slave nodes supported. In both cases, the limitation is the point count capacity of the Device.)

Data Types Supported:

Function Codes	Description
AI	Analog Input Object
AO	Analog Output Object
AV	Analog Value Object
BI	Binary Input Object
BO	Binary Output Object
BV	Binary Value Object
MI	Multistate Input Object
MO	Multistate Output Object
MV	Multistate Value Object
LSP	Life Safety Point Object
LSZ	Life Safety Zone Object

Read Operations Supported	Properties Supported
Read Property	Present Value
Write Operations Supported	**Properties Supported**
Write Property	Present Value

JSON:

Driver Type: Client/Server

Connection information:

Connection type:	Internet Protocol (IP)
Ethernet Speeds	10Base-T, 100Base-T

Posting JSON Data to Remote end point. Here is a sample of the JSON structure using which data can be posted to a remote endpoint:


```
{
   "JBData":{
   "siteId": "ssh",
   "timestamp": "2018-05-23 13:28:39",
   "data": [
    { "siteId": "ssh",
      "data": {
        "KVA": "1.11",
        "KW": "0.83",
        "A_VLL": "384.52",
        "IR": "2.9",
        "IB": "2.89",
        "IY": "0.0",
        "KVAR": "0.74",
        "A_AMP": "1.92",
        "PF": "0.749",
        "KVAH": "742.68",
        "A_VLN": "222.01"
      },
```

```
 "timestamp": "2018-05-23 13:28:48",
 "deviceId": "1153"
},
{
 "siteId": "ssh",
 "data": {
  "F_TMP": "9.86",
  "TMP": "9.94"
 },
 "timestamp": "2018-05-23 13:28:50",
 "deviceId": "148"
},
{

 "siteId": "ssh",
 "data": {
  "ReferenceFrequency": "0.0",
  "AlarmHistory": "10.0",
  "OutputFrequency": "0.0",
  "InputTerminalCurrent": "0.0",
  "InputTerminalVolt": "0.0",
  "InputPower": "0.01",
  "OperationalStatus": "40.0"
 },
 "timestamp": "2018-05-23 13:28:52",
 "deviceId": "1156"
},
{
```

```
    "siteId": "ssh",
    "data": {
     "ControlType": "0.0",
     "CoolLwt": "47.0",
     "CondEwt": "78.0",
     "SctA": "90.0",
     "Status": "1.0",
     "Alarm": "0.0",
     "PerTotCap": "29.0",
     "CondLwt": "83.0",
     "CoolEwt": "52.0",
     "ChlRunFeedback": "1.0",
     "SstA": "44.0",
     "SetPoint": "47.0",
     "HrMach": "6137.0"
    },
    "timestamp": "2018-05-23 13:29:04",
    "deviceId": "65"
   }
   ]
  }
  }
```


Remote Commands:

This unit can receive commands from a remote client in JSON format (with authentication). The command received is processed and sent over to Modbus RTU or BACnet IP as per the configuration. Here is a sample of the command format:


```
        {
```

```
    "data": {
      "deviceId": "1957",
      "type":"setpoint",
      "value": "99",
      "timestamp": "2018-05-23 13:28:48"
     },

}
```


XML:

Driver Type: Client/Server

Connection information:

Connection type:	Internet Protocol (IP)
Ethernet Speeds	10Base-T, 100Base-T

The XML driver supports both GET and POST as a Client and Server. A remote client device can use a HTTP GET request to retrieve the Data stored in the ProtoConvert Data Arrays formatted in a XML page, and POST will be used to modify a specified Data Array Element. When the ProtoConvert is used to Retrieve data from a remote device, a READ operation will perform a GET to a specified URL, and a WRITE operation will perform a POST to a specified URL.

Both client and server sides can be customized to project requirements. Please reach out to our sales team with your XML/SOAP API or ask for our standard XML schema for exposing data.

Screen shots:

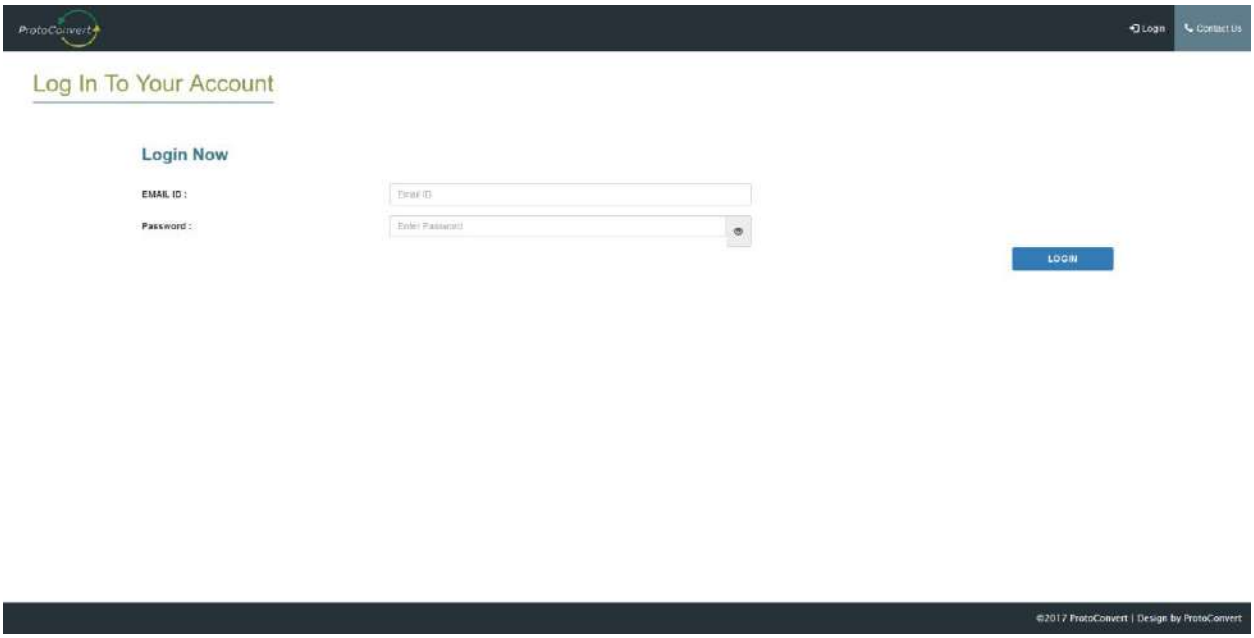


Image 1. Login Screen

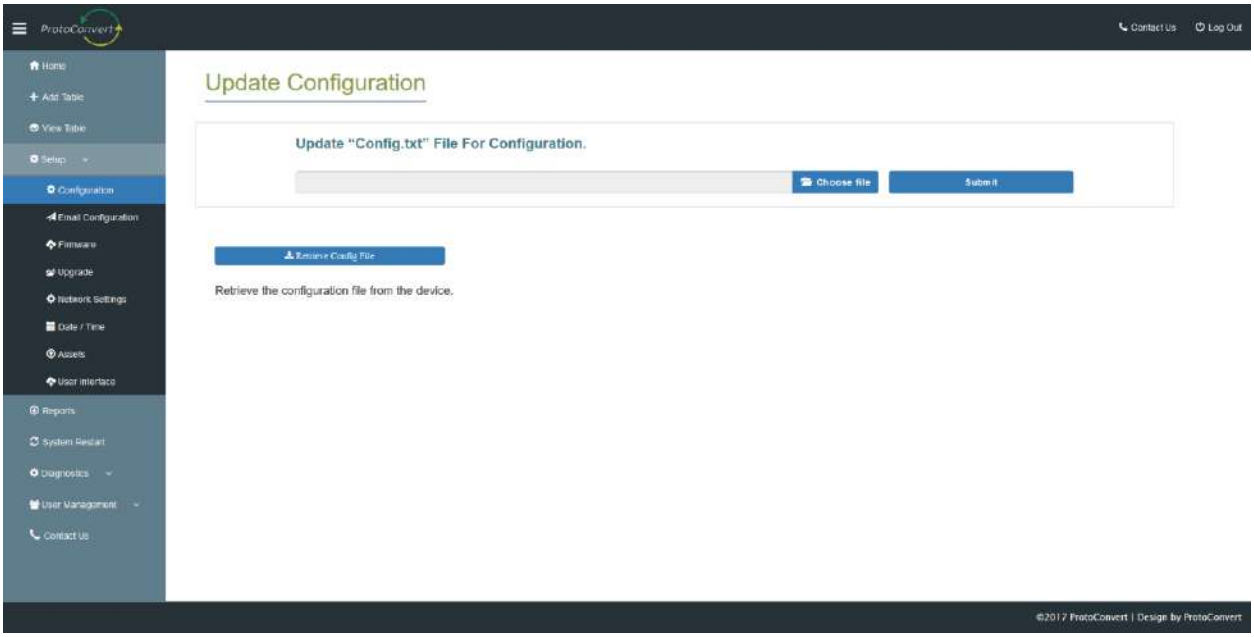


Image 2. Upload/Download Configuration

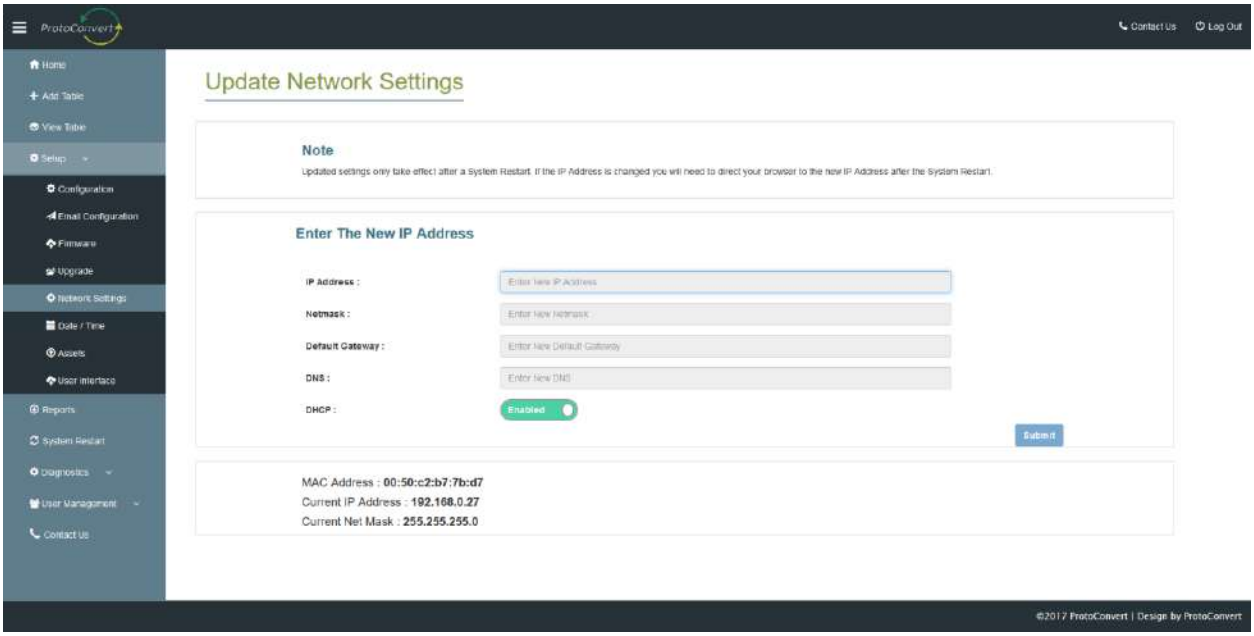


Image 3. Network Customization

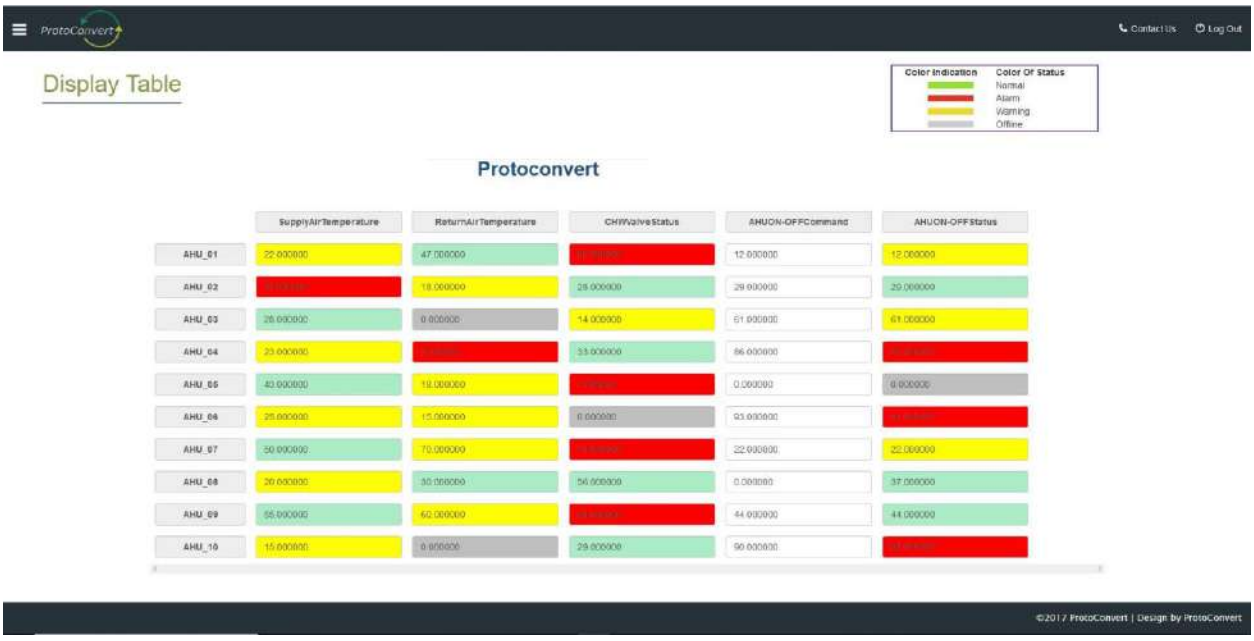


Image 4. Systems/Device Monitoring

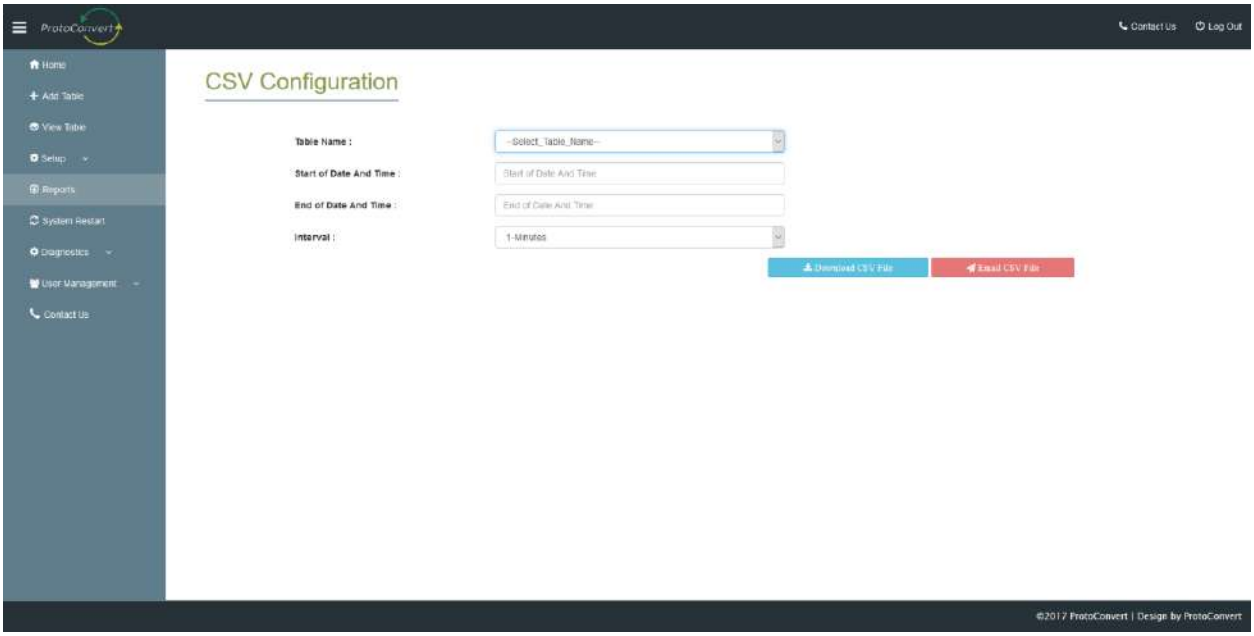


Image 5. Download / E-mail Report

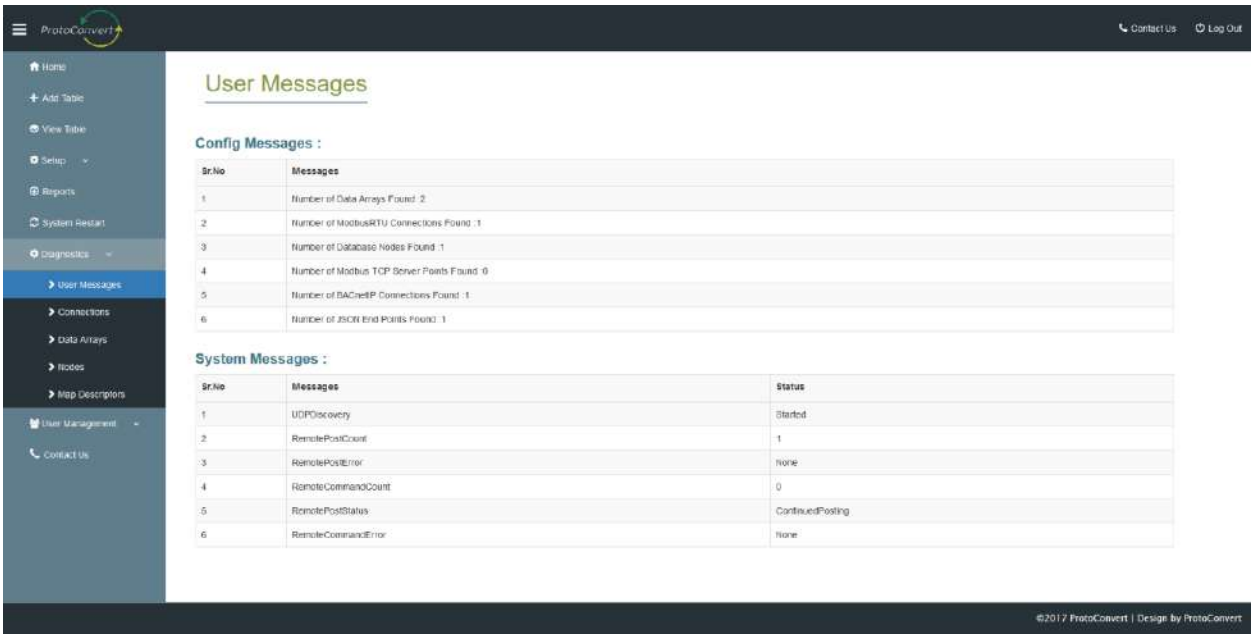


Image 6. Diagnostics Functionality

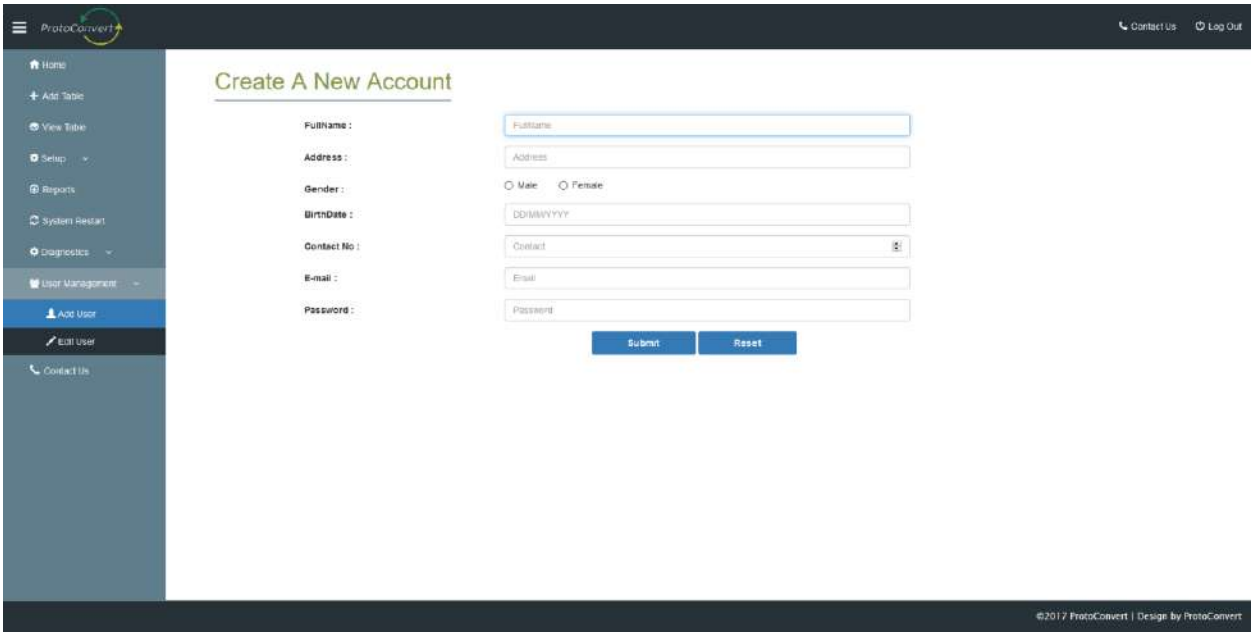
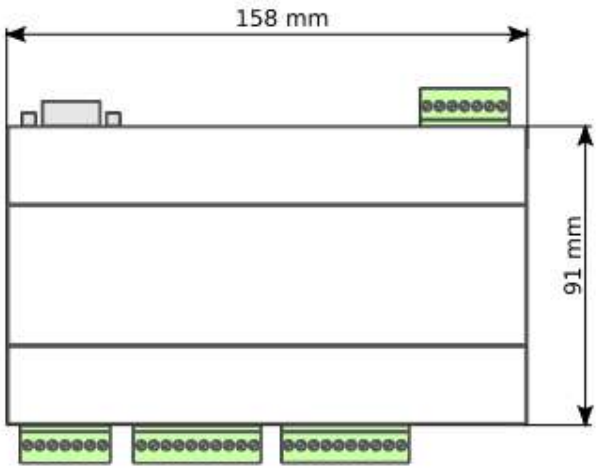
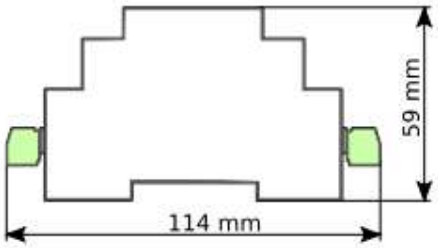


Image 7. Multiple Account Accessibility

Dimension:



TOP View



Side View

Model Selection:

MODEL NO.	DESCRIPTION
PG-WS-100	Web SCADA – Modbus RTU (Bi-directional)
PG-WS-101	Web SCADA – Modbus TCP/IP (Bi-directional)
PG-WS-102	Web SCADA – BACnet MSTP (Bi-directional)
PG-WS-103	Web SCADA – BACnet IP (Bi-directional)
PG-WS-100-DL	Web SCADA – Modbus RTU with Data Logger (Bi-directional)
PG-WS-101-DL	Web SCADA – Modbus TCP/IP with Data Logger (Bi-directional)
PG-WS-102-DL	Web SCADA – BACnet MSTP with Data Logger (Bi-directional)
PG-WS-103-DL	Web SCADA – BACnet IP with Data Logger (Bi-directional)
PG-WS-100-113-DL	Web SCADA – Modbus RTU with JSON and Data Logger (Bi-directional)
PG-WS-101-113-DL	Web SCADA – Modbus TCP/IP with JSON and Data Logger (Bi-directional)
PG-WS-102-113-DL	Web SCADA – BACnet MSTP with JSON and Data Logger (Bi-directional)
PG-WS-103-113-DL	Web SCADA – BACnet IP with JSON and Data Logger (Bi-directional)
PG-WS-100-113	Web SCADA – Modbus RTU with JSON (Bi-directional)
PG-WS-101-113	Web SCADA – Modbus TCP/IP with JSON (Bi-directional)
PG-WS-102-113	Web SCADA – BACnet MSTP with JSON (Bi-directional)
PG-WS-103-113	Web SCADA – BACnet IP with JSON (Bi-directional)
PG-WS-100-109-DL	Web SCADA – Modbus RTU with XML and Data Logger (Bi-directional)
PG-WS-101-109-DL	Web SCADA – Modbus TCP/IP with XML and Data Logger (Bi-directional)
PG-WS-102-109-DL	Web SCADA – BACnet MSTP with XML and Data Logger (Bi-directional)
PG-WS-103-109-DL	Web SCADA – BACnet IP with XML and Data Logger (Bi-directional)
PG-WS-100-109	Web SCADA – Modbus RTU with XML (Bi-directional)
PG-WS-101-109	Web SCADA – Modbus TCP/IP with XML (Bi-directional)
PG-WS-102-109	Web SCADA – BACnet MSTP with XML (Bi-directional)
PG-WS-103-109	Web SCADA – BACnet IP with XML (Bi-directional)