



VERTIV LMS1000 - SNMP APPLICATION NOTE

Document Name: VertivLMS1000_SNMP_IO
Gateway_Application Note_2020-10

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Purpose: This application note presents a step-by-step approach to integrate an intelligent DC Power Plant controller to a FUSION and an iO Gateway.



Target Equipment: Vertiv LMS1000

Equipment Description: The LMS1000 is an intelligent DC Power Plant controller manufactured by Eltek. The controller provides a mean to communicate via SNMP.

PRODUCT DESCRIPTION	
Name	LMS1000
Manufacturer	Vertiv
System Type	System Controller
Modbus Version	
Manufacture Technical Support	1-800-265-9243 Option 4
Specificities	

LMS1000 COMMUNICATION SETTINGS

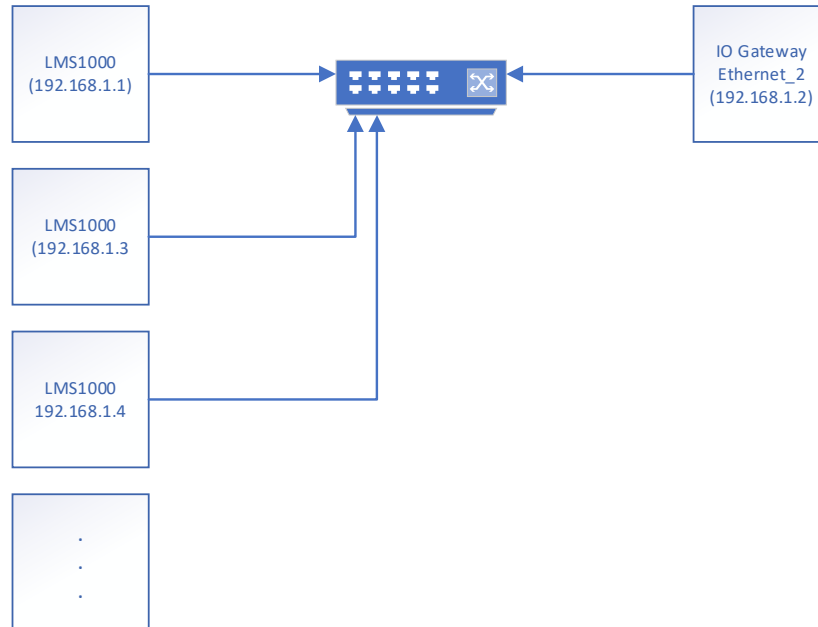
1. Connect to the controller with a laptop using an Ethernet cable
 - a. Default IP address: xxx.xxx.xxx
 - b. Username: User #6
 - c. Password: 6
2. From the left side menu, click on **CONFIGURATION > Settings**
3. From the top menu, click on **SNMP**
4. Verify that the basic settings are enabled
 - a. Get Community String: public
 - b. Set Community String: private
5. From the top menu, click on **Network**
 - a. Adjust the LMS address to be on the same network of the iO ethernet front port
 - i. iO default IP address (Front): 192.168.1.2
 - ii. Make sure that you use a unique address for each device on the network
 - b. Click on Submit

LMS1000 MIB BROWSER WALK

1. Open a MIB Browser application, this procedure is built around iReasoning MIB browser
2. Click on File > UnLoad MIBs, remove Mib file not related to Eltek controller by highlighting all file name (Ctrl + click) and clicking on Ok
3. Click on File > Load MIBs, select the following Eltek MIB files
 - a. LMS-1000-mib.mib
4. Enter LMS1000 address in the Address bar
5. Click on Advanced
 - a. Read Community: public
 - b. SNMP Version: 2
6. Set Operation to Get Next and click on Go

- a. If set correctly, a value should be returned in the Result Table
7. From the left side menu, expand emersonESNA > lms > lmsChannels
 - a. Select lmsAnalogChannelTable
 - b. Press on Ctrl + T (Table View)
 - i. A new tab should appear next to the ResultTable tab
 - ii. Select the tab in the top menu
 - iii. Wait for the table value to appear
 - iv. Click on Export
 - v. Save result in CSV

LMS1000 CONNECTIONS TO THE IO GATEWAY



IO GATEWAY COMMUNICATION SETTINGS:

1. Connect to the iO Gateway with a laptop using an Ethernet cable
 - a. Ethernet_2 default IP address is 192.168.1.2
 - b. Connect your laptop on the IO Gateway front port, open a web browser and type the gateway IP address in the address bar
2. Navigate to **Settings/Connections/RS-485 COM A**
 - a. Set RS-485 – COM A need to be Enable
 - b. Set Baud rate to 9600
 - c. Set Stop bits to 1
 - d. Set Protocol to Modbus RTU Slave
 - e. Set Data bits to 8

f. Set Parity to None

The screenshot shows the 'Port Configuration' window. At the top, there is a 'State' toggle switch which is turned on (blue). Below this, the 'Port Name' is set to 'COMA'. The 'Protocol' is set to 'MODBUS RTU SLAVE'. The 'Baudrate' is set to '9600'. The 'Data Bits' are set to '8'. The 'Stop Bits' are set to '1'. The 'Parity' is set to 'NONE'. At the bottom, there are 'Save' and 'Cancel' buttons.

3. Navigate to **Settings/Protocols /Modbus Slave**

- a. Set State to Enable
- b. Use a Slave ID that is not currently used by another Modbus device

The screenshot shows the 'Modbus RTU' configuration window. At the top, there is a 'State' toggle switch which is turned on (blue). Below this, the 'Slave ID' is set to '80'.

4. Navigate to **Data Sources (Create LMS1000 Equipment)**

- a. Click on + Equipment
- b. Add an Equipment name (DC plant identification)
- c. Set Equipment Category to DC Plant
- d. Set Equipment Model to LMS1000
- e. Set Communication Protocol to SNMP Get
- f. Enter Equipment IP Address
- g. Set SNMP Version to SNMP v2c
- h. Set SNMP Device Community Name to public
- i. Select Equipment Polling Rate to 30 sec

- j. Select Equipment Time Out to 5 sec
- k. Save the equipment

Communication Protocol *
SNMP Get

Manufacturer *
Emerson

Communication Protocol - SNMP

Equipment IP Address *
192.168.1.1

Equipment Hostname

SNMP Version *
SNMP V2C

Constant Part Of OID

SNMP Device Community Name *
public

Equipment Polling Rate *
30 sec

Equipment Time Out *
5 sec

Port Number *
161

5. Navigate to the **Equipment Data Sources/Action/.../Data Points**

- I. Click on + Data point
- m. Set Datapoint Description to Plant Voltage
- n. Set Suffix to .1.3.6.1.4.1.885.2.3.2.1.3.65.57.57.48.49
- o. Click on Advanced
 - i. Set Register Data Type to 16-bit integer
 - ii. Set Register Type to holding Register
 - iii. Set iO Modbus Register 1 (add 1 to register for each new datapoint)
 - iv. Set Polling Rate to 30 sec
 - v. Set Factor to 1
 - vi. Set Offset to 0
- p. Click on Pull Data
- q. Plant voltage should appear under the Value column

<input checked="" type="checkbox"/>	ID	Datapoint Description	Equipment SNMP OID	Value	Advanced	Connect
		Constant Prefix	Suffix			
<input checked="" type="checkbox"/>	S2AI1	Plant Voltage	1.3.6.1.4.1.885.2.3.2.1.3.65.57.57.48	0	V	Decima
<div style="display: flex; justify-content: space-between;"> <div> <p>Register Data Type</p> <input type="text" value="16 bit integer"/> </div> <div> <p>Register Type</p> <input type="text" value="Holding Register"/> </div> <div> <p>iO Modbus Register</p> <input type="text" value="4"/> </div> <div> <p>Polling Rate</p> <input type="text" value="30 sec"/> </div> <div> <p>Factor</p> <input type="text" value="1"/> </div> <div> <p>Offset</p> <input type="text" value="0"/> </div> </div>						

IO GATEWAY MODBUS RTU CONNECTION

Refer to you detailed engineering or the layout of your MODBUS network, respect the MODBUS best practises at all times by preventing star shape network, thus terminate to the last equipment of the current MODBUS daisy chain trunk or if this is you first equipment on the network device, then terminate directly at the FUSION back panel. The FUSION offers (2) RS-485 ports, one called MLINK and the other one RS-485. Use the connector available from Multitel to convert the RJ-12 connector to a screw type connector. (Part# is C-7000-MOD).

If no other Modbus device are connected to the Fusion

1. Connect Fusion MLINK or RS485 + (C-7000-MOD) to IO Gateway RS-485 COM A Rx/Tx +
2. Connect Fusion MLINK or RS485 – (C-7000-MOD) to IO Gateway RS-485 COM A Rx/Tx -

FUSION COMMUNICATION SETTINGS

Once you have logged into the FUSION using the “supervisor” username and no password, click on **CONFIG** menu and select “**Communication Ports**” from the left menu. Select the **MLINK** or **RS-485** port and config operating parameters as follows:

Communication Ports	
COMRS485	Value
Enter protocol (0: Terminal, 1: Mlink, 2: ISNMS, 3: MODBUS, 4: NONE, 5: Port forwarding, 6: Card reader)	MODBUS <input type="text"/>
Enter baudrate (0=300, 1=1200, 2=2400, 3=4800, 4=9600, 5=19200, 6=38400, 7=57600 or 8=115200)	9600 <input type="text"/>
Enter character parameters (number of bit, parity, stop bit) 1: 8N1, 2: 8E1, 3: 8O1, 4: 7N1, 5: 7E1, 6: 7O1)	8N1 <input type="text"/>
Enter configuration (1-RS485(2 wires), 2-RS422(4 wires))	RS485(2 wires) <input type="text"/>
Enter the number of IDLE char to wait (1 to 255)	5 <input type="text"/>
Enter device (0=None, 1=Modem)	None <input type="text"/>

FUSION “MODULE” SETTINGS

Once the FUSION communication port is setup, associate the equipment to a specific Module number. Select “**Modules**” from the left menu and choose the pre-assigned module or click on a module available (State = None).

Modules	
Modules	Value
M12	Enabled
The module state is	LMS1000 (SNMP w/ iO)
The name is	1
The slave ID is	RS485 Back Port
The port is	4
The number of retry is	GEN
The module type is	10
The time out is	Most significative register = higher address
The register order is	subtract 1 from given address
The register base address is	50
The silent (in 0.01 sec) before sending request is	

*Configure the name of the Module using the reference name of the DC Plant, such as “**Transport #1**”*

FUSION “TEST CHANNEL” SETTINGS

Once the Equipment is associated to a module, a list of channels will appear and be available for Multitel to configure. However, in order to test the MODBUS RTU wiring and iO controller communication settings, it is highly recommended to configure a test channel as per the following

to validate. Click on MxA1 and configure the operating parameters as follows (the registered address should match the one used in the iO Gateway):

Modules		Edit <<back
Modules		
M11A1	Value	
The channel state is	Enabled	
The name is	Plant Voltage	
The measure unit is	V	
The number of decimal digits is (4 = auto)	2	
The bits for the mask used to extract value is	None	
The strings associated to each code is	Not Programmed	
The register address is	1	
The reading function code is	4	
The sign is	Normal	
The data type is	16-Bit Integer	
The sign is	Signed Integer	
The multiplication factor is	0.01	
The channel offset is	0	