Power æ[™]

Powerlink

Modbus Configuration

Instructions on how to enable the Modbus service on the Powerlink.



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1. Modbus Configurations

1.1 ENABLE MODBUS

The Powerlink modules support the use of Modbus TCP, the steps for enabling this feature are listed below.

1. Navigate to the provisioning site of the PowerLink, and then to the settings tab in the top right-hand corner.

F	Power⊕		DASHBOARD	INSTALLATION	SETTINGS
>		Summary Summary Site Installation Details			
		Rack Voltage & Current	Cast 60 Minutes 👻		

2. Locate the Modbus settings panel and click the checkbox to enable

Modbus Server	
Enable Local Modbus (MSM) Server	
None -	

Make sure to then click 'Apply'

3. You will now be able to connect to the Modbus service via a client, exact configuration will depend on the client used however you will need the IP address of the PowerLink in order to connect, if you are using the hostname of the device to connect you can find the IP address on the settings page under Network > IPV4 Address.

The PowerLink will connect to the network using DHC	P by default; If required these settings can be configured mar	nually below.
Use Manual Configuration		
MAC Address: b8:27:eb:28:2d:c9		
IPV4 ADDRESS:	SUBNET MASK:	
192.168.2.139	255.255.255.0	NOTE
		The connection port will be 502
GATEWAY:	DNS SERVER:	The Modbus or Slave ID is unit=1
192.168.2.1	127.0.0.1	• The minus offset should be 0.
APPLY TEST CONNECTION		

4. Once you are connected you will want to access the registers outlined in the provided "MSM Register Map" spreadsheet.

A	В	c	D	E	F	G	н		J	K	L M	N	0	P	
Modbus	TCP: S	Summai	v Registers												
Updated 2	Cant 2	021													
b opuated 24	s sept 2	021													
n nation of		and Date	ne peste					Desistant sections			tores Deals		Alarman De	them. Deals (Dettern)	Deals Dealster Offert 7)
Registers	ectore	ach Bau	ery Pack					Register Locations	TOPE	acin Bat	tery Pack		Adamits: Da	ittery Pack (Battery	Pack Register Offset 7)
Offert	-	ampie	Friendry Name	Onits	Data	Description		batery Pack			Basisters		bit index	Friendly Name	Des
onset	Time	gister	-		түре				Neg	ster	Time Leasting				
	түре	01001	Rattery Dask Secial Number (MSM/)	-	wint16	The most similizent 16 bits of a 22 bit battery and social number		Rattern pack #20	ype i	4 9.9.4	A 01400		0	Ower Wellings	1 - Rattern nach mer voltage een
1	4	01001	Battery Pack Serial Number (1934)	n/a	unit16	The least significant 10-bits of a 32-bit battery pack serial number.		Battery pack #10	4 0	1361	4 01400		1	Under Voltage	1 - Battery pack under unlage con
2 2	4	01002	Battery Pack Serial Wolfber (LSW)	inva m)/	wint16	The most significant 10-bits of a 32-bit battery pack serial number.		Battery pack #19	4.0	1241	4 01360	-	2	Ower Current	1 - Pattery pack under vorlage co
0 0	4	01003	Battery Pack Voltage (1934)	(m)/	uint16	The last significant 16-bits of a 32-bit battery pack voltage.		Battery pack #17	4 0	1221	4 01300		2	Over Current	1 - Battery pack over tomosratu
1 4	4	01005	Battery Pack Average Current (MSW)	mA	int16	The most significant 16-bits of a 32-bit current into (out of) the battery pack averaged over the last 30 sers		Battery pack #16	4 0	1301	4 01320		4	Reserved	Guaranteed to be 0 when no alar
2 5	4	01005	Battery Pack Average Current (ISW)	mA	int16	The least significant 16-bits of a 32-bit current into (our of) the battery pack, averaged over the last 30 secs.		Battery pack #15	4 0	1281	4 01300		5	Reserved	Guaranteed to be 0 when no alar
3 6	4	01007	Battery Pack Average Temperature	°C.	int16	The temperature inside the battery pack averaged over the last 30 secs		Battery pack #14	4 0	1261	4 01280		6	Reserved	Guaranteed to be 0 when no alar
4 7	4	01008	Alarms: Battery Pack	n/a	bitfield16	Zero when no battery pack alarms active. See the separate table for more details.		Battery pack #13	4 0	1241	4 01260		7	Reserved	Guaranteed to be 0 when no alar
5 8	4	01009	Alarms: System (Future Provision)	n/a	bitfield16	Zero when no system alarms active. See the separate table for more details.		Battery pack #12	4 0	1221	4 01240		8	Reserved	Guaranteed to be 0 when no alar
6 9	4	01010	Battery Pack State of Charge (Not in Use)	56	uint16	Not in use! The state of charge of the battery pack (integers from 0 to 100).		Battery pack #11	4 0	1201	4 01220		9	Reserved	Guaranteed to be 0 when no alar
7 10	4	01011	System Sign of Life	n/a	uint16	A value which changes each time the register set is updated.		Battery pack #10	4 0	1181	4 01200		10	Reserved	Guaranteed to be 0 when no alar
8 11	4	01012	Reserved	n/a	n/a	n/a		Battery pack #09	4 0	1161	4 01180		11	Reserved	Guaranteed to be 0 when no alar
9 12	4	01013	Reserved	n/a	n/a	n/a		Battery pack #08	4 0	1141	4 01160		12	Reserved	Guaranteed to be 0 when no alar
0 13	4	01014	Reserved	n/a	n/a	n/a		Battery pack #07	4 0	1121	4 01140		13	Reserved	Guaranteed to be 0 when no alar
1 14	4	01015	Reserved	n/a	n/a	n/a		Battery pack #06	4 0	1101	4 01120		14	Reserved	Guaranteed to be 0 when no alar
2 15	4	01016	Reserved	n/a	n/a	n/a		Battery pack #05	4 0	1081	4 01100		15	Reserved	Guaranteed to be 0 when no alar
3 16	4	01017	Reserved	n/a	0/9	0/0		Battery pack #04	4 0	1061	4 01080				
4 17	4	01018	Reserved	n/a	n/a	n/a		Battery pack #03	4 0	1041	4 01060		<i>(FUTURE P</i>	ROVISION] Alarms:	System (Battery Pack Register C
5 18	4	01019	Reserved	0/0	0/0			Battery pack #02	4.0	1021	4 01040		Bit Index	Friendly Name	Des
6 19	4	01020	Reserved	0/0	0/0			Battery pack #01	4 0	1001	4 01020				
7	-	OIGES		190	1.90			Conter potentia		1001	101020		0	Reserved	Guaranteed to be 0 when no glar
8													1	Reserved	Guaranteed to be 0 when no alar
9 Notes:													2	Reserved	Guaranteed to be 0 when no alar
0 1. Each bat	tery pa	ck in the	rack has 20 registers allocated, although som	e of th	e registers a	re reserved.							3	Reserved	Guaranteed to be 0 when no alar
1 2. Battery	pack #0	1 (1st bat	tery) is defined as the bottom battery in th	e rack.									4	Reserved	Guaranteed to be 0 when no alar
2 3. Battery	pack #2	0 (20th b	attery) is defined as the top battery in a raci	k of 20	batteries.								5	Reserved	Guaranteed to be 0 when no alar
3 4. Battery	pack #0	1 occupie	s register locations [4]01001 to [4]01020.										6	Reserved	Guaranteed to be 0 when no alar
4 5. Battery	pack #0	2 occupie	s register locations [4]01021 to [4]01040.										7	Reserved	Guaranteed to be 0 when no alar
5 6. Battery	oack #N	occupies	register locations ([4]01001 + (N-1)*20) to ((41010	20 + (N-1)*2	01						-	8	Reserved	Guaranteed to be 0 when no alar
6 7. All regist	ers are	'holding	registers' (register type 4).										9	Reserved	Guaranteed to be 0 when no alar
7 8. At the p	hysical	protocol	ayer, the register address in the PDU packet	t is the	register loca	tion given in this document with the type [4] dropped and with 1 subtracted. Eg. Register location [4]01001 = physic	cal addre	ss 1,000.					10	Reserved	Guaranteed to be 0 when no alar
8								-					11	Reserved	Guaranteed to be 0 when no alar
9													12	Reserved	Guaranteed to be 0 when no alar
0					_		_		_	_			10	0 1	a
	- N	NSM SI	ummary Summary SBMS Re	gist	ers De	tailed SBMS Registers System Summary Registers SwitchDin Rack (+)	1 4								•
	_	_		_					_	_					

1.2 VICTRON VENUS

This document is a reference and guide only. Please see the Victron datasheet for more information about connecting a Venus and Lynx device in a system. To enable this connection you will first need to select Victron Venus from the drop down box under Modbus Server.

Please Select None Victron Venus GX Victron BMV-700 Series	Enable Local Modbus (MSM) Server		
Please Select None Victron Venus GX Victron BMV-700 Series			
None Victron Venus GX Victron BMV-700 Series	Please Select		
Victron Venus GX Victron BMV-700 Series	None		
Victron BMV-700 Series	Victron Venus GX		
	Victron BMV-700 Series		

1.2.1 BACKGROUND AND POWERLINK BASICS

These instructions provide basic setup information about the Lynx Shunt and the Venus GX, both Victron devices that can be configured to work with the Powerlink. Note that the Lynx Shunt sends data to the Venus GX via CAN Bus and the Venus populates registers on its own Modbus TCP Server, which is accessed via the network.

First the Powerlink needs to be provisioned with the latest firmware, at least v2.0.2. Then the Venus and Lynx must be setup. This includes setting up Venus settings, enabling Modbus TCP and configuring the Lynx for the connected batteries.

1.2.2 COMMUNICATIONS CONNECTIONS

- Connect the shunt to the Venus device via CAN bus, a network cable is used for this connection. On the Venus side, the top VE.Can connector is used and a provided CAN bus terminator is used on the bottom input (see right image).
- Note the power cables in the bottom right. See datasheet for power specifications. These cables power the Venus. The shunt is powered by the SBMS batteries.



- 3. On the Lynx Shunt, connect the CAN bus on the right side, or the side away from the large metal terminals and the CAN terminator on the left (See below image).
- 4. Follow the datasheet to correctly connect with the SBMS batteries.



1.2.3 ENABLING THE MODBUS TCP

- 1. Connect to venus.local or via the devices IP address
- 2. On the main page, scroll down to settings.

Device List	23:14	hoti	(evs
Battery temperature sensor (2)	Disconnected >		
Fuel tank (1)	Disconnected >	1000	-
Battery temperature sensor (1)	Disconnected >	esc	0
Fuel tank (2)	Disconnected >	1	
Notifications	>		
Settings	>		
실 Pages ^	≣ Menu		

3. Under settings, scroll down (a bit) to services.



4. Ensure sure Modbus TCP is Enabled.



1.2.4 CONFIGURING LYNX SHUNT BATTERY SETTINGS

- 1. Connect to venus.local or via the devices IP address.
- 2. First verify the Shunt is shown. At the top of the main page: Device List, the shunt should appear with a seen voltage and current.

Device	e List	23:20	hot	(evs
Lynx Shunt	45.1	1V 0.4A >		
Fuel tank (3)	Disco	onnected >		
Battery temperature sensor (2) Disce	onnected >	esc	ę
Fuel tank (1)	Disco	onnected >	1	
Battery temperature sensor (1) Disce	onnected >		
Fuel tank (2)	Disco	onnected >		
과 Pages 🗸 🗸	≡ M	enu		-

3. There will likely be no SOC because it has not synced yet. Select the device to see further details.

<	Lynx Shunt		23:20
	45.13V	0.4A	18W
State of charge			
Battery temperal	ture		18°C
Time-to-go			
Relay state			Off
Alarm state			Ok
<u>ᆈ</u> Pages	٥	≡м	lenu

4. Scroll Down to Settings for the Shunt.

<	Lynx Shunt	23:21	hotkevs
Relay state		Off	
Alarm state		Ok	
Details		>	esc ←
Alarms		>	^
History		>	
Settings		>	
교 Page	s ^	≡ Menu	

 Select Battery to set Battery Specific Settings (including Capacity which will vary by rack size and battery type, and voltage which will vary by battery type). Any other settings that should be set should be provided by PowerPlus Energy.

<	Settings	23:22	hotkeys
Battery		>	100000000 #1000
Alarms		>	
Relay (on batte	ry monitor)	>	esc ←
Restore factory	defaults	Press to restore	î
			$\leftarrow \downarrow \rightarrow$
브 Page	5	≡ Menu	

1.3 VICTRON BMV

Simply connect the USB for VE.Direct USB Cable from the BMV-700 series to the Powerlink. The Powerlink will handle settings for the installed battery rack. This means the SBMS count and the SBMS type select on the Powerlink Provisioning Website must be accurate.

Of note, default values are programmed for Battery Characteristics. These should be changed for SBMS batteries based on hardware characteristics. To change them, add a migration to SBMS Database and update the values. The values auto programmed are from the SBMS Database.





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