ventev

USER GUIDE FOR

BTRM300 & BTRM400 Battery Test Remote Monitor

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1. Warnings

Carefully observe proper DC polarities connections for batteries, chargers, and loads. *** Unit WILL be damaged by incorrect polarity connections ***

1.1. BTRM300

Maximum rated Voltages for Battery, Charger, Power Supply, and Loads is 30 VDC Maximum rated Current for Battery, Chargers, Power Supply and Total Load is 20 Amps *** Unit can be damaged by exceeding these limits ***

*** Use of an Inline fuse is recommended to prevent over current conditions***

1.2. **BTRM400**

Maximum rated Voltages for Battery, Charger, Power Supply, and Loads is 60 VDC Maximum rated Current for Battery, Chargers, Power Supply and Total Load is 10 Amps

Alarm Connections CH1, CH2, CH3, CH4 rated for 60 VDC, 80ma max load.

- Observe correct polarity
- Do not exceed these ratings.
- Do not connect to AC line powered loads.
- *** Unit can be damaged by exceeding these limits ***

*** Use of an Inline fuse is recommended to prevent over current conditions***

2. Supplied Equipment

Included in box:

- BTRM300 (Tessco SKU 281170) or BTRM400 (Tessco SKU 246962)
- 3ft Ethernet Cable
- BTRM User Guide

3. Overview

As batteries age their capacity slowly deteriorate until they need replacement. Additionally, battery capacity can be affected by extended operation under adverse conditions of high or low temperatures, high discharge rates, under charging (in particular if left in a completely discharged state for weeks or longer), charging voltages higher than recommended (this condition immediately starts generating surplus hydrogen gas for which even Sealed Lead Acid Batteries are forced to vent).

Although a battery's state of charge can be inferred by monitoring the battery terminal voltage while in standby mode, this voltage will not give an indication of actual capacity. Furthermore, a battery that is marginal may not be detected until it is called upon to perform, at which point it is too late to prevent a system failure. For a battery connected to a charger that maintains a float voltage, neither condition can be checked.

In these cases, the BTRM is designed to evaluate battery capacity transparently to system operation and provide network-based notification should a battery fail, or its capacity drop below a specified level. This also has the advantage of allowing batteries that exceed their nominal lifetime to remain in service, provided they meet capacity requirements.

4. System Description

BTRM300 & BTRM400 Overall System Connection Diagram



System Connection Overview

4.1. Power Supply (+/-)

The BTRM must be connected to the load Power Supply in order to energize the load while the Battery Charger is charging the battery. In the above figure, a separate Load Power Source and Battery Charger are used. Alternatively, a single Power Source can be used. In this case the Charger + and Power Supply + terminals must be connected together.

4.2. Battery Charger (+/-)

The BTRM must be connected to the battery charger in order to charge the battery bank after the battery capacity test is performed.

4.3. Battery (+/-)

BTRM300 Allowable system voltages: 12V/24 (Max 32V)

BTRM400 Allowable system voltages: 12V/24V/36V/48V (Max 60V).

Remember to select BTRM operation voltage on the Port Options page or selecting via one of the supported protocols (DNP3/Modbus/Snmp) for proper operation.

The battery bank must be connected directly to the BTRM, such that the BTRM can power the load from the Battery without any additional power source in circuit in order to perform the battery capacity test.

4.4. Load (+/-)

The battery bank must be connected directly to the BTRM in order to perform the battery capacity test.

4.5. Alarm Connector (+/-)

BTRM300 & BTRM400 have 4 Channels of ground referenced IO.

All 4 channels can be used to sense and monitor 0V to 60V.

Channels 1 and 2 can be used to activate relays, audible indicators, or lamps by pulling the IO pin to ground under certain alarm conditions.

Both Channels 1 and 2 contacts are normally open when power is off. The user can select normally open or normally closed under an alarm condition.

Do not exceed the contact maximum relay ratings of 60 Volts, 80 ma. Do not use to directly operate AC line connected equipment.

5. Basic Setup

Connecting unit to a PC

Notes on accessing a BTRM over Ethernet: Technically you should be able to plug the device into your current network, regardless of how your current network IP addressing is set up and be able to reach the BTRM's Status and Setup web page by entering its IP address (found on the BTRM front label) in a Web Browser on a local computer. However, in practice, not so easy, due to a wide variety of possibly incompatible network addressing and firewall configurations. These difficulties occur most often if someone else has set up the network settings, and in particular where these settings are "managed" by software installed on your computer by your internet provider or corporate IT departments.

To avoid these potential network issues at the initial evaluation stage it is best to connect both your computer and the device to a hub/network switch (one that is not connected to the rest of your network) or directly connect your computer to the BTRM with a cross-connected Ethernet cable.

Initial Power up to set IP address

To power up the device, connect the battery to the BTRM. Power up the power supply and battery charger. The BTRM starts in self-test mode for 5 to 15 seconds. PB1 and PB2 push button LEDs will blink.

Once the device is power up and cabled to the Ethernet, the GREEN LED will illuminate on the Ethernet connector and startup should be complete within 30 sec.

Accessing your host computer's network settings

From the start button select Control Panel -> Network and Internet -> Network Connections

Control Panel\Network and Internet\Network Connections						2 <u>00</u> 3		×
🔶 🚽 = 🛧 😰 > Control Pane	l > Network and	Internet > Network Connections	ٽ ~					P
<u>File Edit View Advanced Tools</u>	s							
Organize 🔻						855 -	•	0
Name ^	Status	Device Name	Connectivity	Network Category	Owner	Туре		
🥵 Bluetooth Network Connection	Not connected	Bluetooth Device (Personal Area			System	Personal Area I	Vetwork	
Ethernet	Network	Intel(R) Ethernet Connection (2)	Internet access	Private network	System	LAN or High-S	peed Inte	ernet
_解 ff[] Wi-Fi	Not connected	Intel(R) Dual Band Wireless-AC			System	LAN or High-S	peed Inte	ernet
٢								
3 items								
3 items						Comp	uter	

- Select the adapter that you plan to use and from the File menu, select properties.
- This will bring up the properties window, shown on the right.
- Scroll down to the Internet Protocol Version 4 (IPv4) item, select it, and then select "properties".
- This will bring up the window to allow manual configuration of the network adapter's IP addresses.

Local Area Connection Properties	x					
Networking Sharing						
Connect using:						
Marvell Yukon 88E8055 PCI-E Gigabit Ethernet Controller						
<u>C</u> onfigure	וו					
This connection uses the following items:						
🗹 🖳 Client for Microsoft Networks	ור					
🗹 💂 QoS Packet Scheduler						
🗹 🛃 File and Printer Sharing for Microsoft Networks						
Internet Protocol Version 6 (TCP/IPv6)						
Internet Protocol Version 4 (TCP/IPv4)						
Link-Layer Topology Discovery Mapper I/U Driver						
Link-Layer Topology Discovery Responder						
	- 1					
Install Uninstall Properties						
Description	- II					
Transmission Control Protocol/Internet Protocol. The default						
wide area network protocol that provides communication						
across diverse interconnected networks.						
OK Cance	:					

Setting IP address information for BTRM default

Using a direct connection to the device with a cross connected cable or using a network switch (hub), use the manual IP settings shown on the right. This property dialog can be found in the TCP/IP properties, which is a sub dialog of the Network Connections Properties, both found in Control Panel Network Connections.

? X

nternet Protocol (TCP/IP)	Properties ? 🔀	👍 Local Area Connection Status
General		General Support
You can get IP settings assign this capability. Otherwise, you u the appropriate IP settings. O Obtain an IP address aut O Uge the following IP addre IP address: Sybnet mask:	ed automatically if your network supports need to ask your network administrator for omatically ess: <u>192.168.1.100</u> <u>255.255.0</u>	Connection status Address Type: Assigned by DHCP IP Address: 192.168.1.102 Subnet Mask: 255.255.255.0 Default Gateway: 192.168.1.1 Details
Default gateway: Obtain DNS server addre Use the following DNS server: Preferred DNS server:	192.168.1.1 ss automatically aver addresses: 192.168.1.1	Windows did not detect problems with this connection. If you cannot connect, click Repair.
Alternate DNS server:	Advanced	Gos

(Typically, the default gateway and DNS server need not be entered.)

If using a router, check your local area connection settings to see if the router gateway address is the same as the default device gateway of 192.168.1.1. If it's not, you will need to use a direct connection as described above to change the device gateway address to match the router's gateway address.

Verify IP address information

For the initial configuration of the BTRM and to change Network IP settings for placement in an IP based network you will need to connect the BTRM directly to your PC. Once connected to your PC you will be able to configure the BTRM to match your network settings.

You will need the following information from your network administrator to add the BTRM to your IP Network:

- IP Address we recommend using a static IP address for the BTRM
- Gateway what is the IP address of the Gateway of your network
- Subnet Mask what is the mask of your network
- Primary DNS IP address of the primary DNS server for your network

Once you have your connection made with laptop or PC you will need to record your IP address and verify connection to the BTRM.

NOTE: It may be necessary to give your PC or Laptop a static address to access the BTRM default network.

IP Address: 192.168.1.200 Example: Subnet mask: 255.255.255.0

For Wi-Fi connection

On the taskbar, select the Wi-Fi network icon //

• Under the Wi-Fi network you're connected to, select **Properties**.

(i.	Contoso Connected, secured Properties	
		Disconnect
(k.	Fabrikam Secured	
(i.	Woodgrove Secured	
<u>Netw</u> Chang	ork & Internet settir e settings, such as makin	IGS g a connection metered.
Ø ₩+6	Airplane mode	0µ0 Mobile hotspot
-199	~ 9	■ //:: 01 12:00 PM 2/10/2017 😼

Under Properties, look for your IP address listed next to IPv4 address.

For Ethernet connection

On the taskbar, select the Ethernet network icon

1. Select the Ethernet network connection

E Connected
Contoso Secured
Fabrikam Secured
Network & Internet settings Change settings, such as making a connection metered.
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- 2. Under Ethernet, select the Ethernet network connection.
- 3. Under Properties, look for your IP address listed next to IPv4 address.

Verify connectivity to the BTRM by sending a Ping command to the BTRM's default IP address: PING 192.168.1.214 <Enter> you should receive four REPLY messages from the BTRM.

Command window available from Windows 10 by searching for cmd.exe



Open a New Web Browser Session (Microsoft Edge, Firefox, Chrome) and type in the address of the BTRM (default is 192.168.1.214) and click <Enter>.

If everything is set up correctly you should see the System Status of the BTRM. **Note:** The **Green** Status Indicator should be blinking when the BTRM is active and connected.

ventev.						
stem Status						
attery Status	S	ystem: 7	30 Norther	n		
		•				
attery Test	SI	tatus				
nual Test	В	attery V	oltage		13.39	
rt Ontions	B	attery C	urrent		-0.06	
		oad Curr	ent		1.04	
1ail	S	upply Vo	ltage		13.41	
nfiguration	S	ystem Te	emp		27 °C	
mail Test		apacity			GOOD	
atwork	10	O Chann	els			
onfiguration		Channel	Analog V	Digita In	al Digita Out	al
NP3 Modbus	С	H1	0.0	OFF	OFF	
figuration	C	H2	0.0	OFF		
MP	C	НЗ	13.1			
onfiguration	C	H4	0.0			
MP MIB File	Τ	est Statu	IS		OFF	
	U	IPS Mode			OFF	
lp	U	IPS Mode	Status		OFF	
thorization	S	ystem U	p Time: 7	Days (2:27	
oout	L	ow Volta	age Shutdo	own: D	isabled	

amataa

6. Mounting

The BTRM needs to be mounted in a water-proof location. Typically, in a cabinet with access to DC power use the DIN rail clip on the BTRM to secure to the DIN rail on the enclosure back plate wall.

6.1 Wiring Battery Connection

Connect the battery connectors from the BTRM to the battery bank per system configuration diagram**.

6.2 Wiring Power Supply Connections

Connect the BTRM power supply connections to the load power supply per system configuration diagram**.

6.3 **Wiring battery Charger Connections** Connect the BTRM battery charger connections to the battery charger per system configuration diagram**.

**see page 5 for system connection diagram

6.4 Alarm Connections

Alarm connections are sets of normally open/closed contacts. These contacts are isolated from the BTRM power source, and do not provide power. They can be used to alert the Network Operations Center by connecting the alarms to your systems existing alarm signaling pairs. Alternatively, the alarm contacts can be used to operate external DC relays that then can be used to control alarm lights or audible alerts. Provided that the contact ratings (60V, 80 ma) are not exceeded.

6.5 Clearing Battery Test Data

To clear test data from the BTRM memory, press and hold button PB2 for 15 seconds until the LEDs flash.

7. Web Interface Menus

The BTRM will need to be configured to match your network settings as well as your email and SNMP notification if those features are to be used. See section 5 for IP addressing setup. The default Web page address of the BTRM is 192.168.1.214.

Once the BTRM is connected, enter this number into your web browser.

The Screenshots included with each subheading will explain the different menus of the BTRM user interface. This interface allows you to remotely configure and change settings across the network.

7.1 System Status Page

This screen displays an overview of the status on the BTRM. You can quickly see any alarms occur by watching this screen.

ventev								
								BTRM300
System Status								
Battery Status	Syst	tem: 7	30 Northeri	1				
Battery Test	Stat	tus						
Manual Test	Bat	tery Vo	oltage		13	.39		
Port Options	Bat	tery C	urrent		-0.	.06	4	
	Loa	d Curr	ent		1.0)4	_	
E-Mail	Sup	ply Vo	ltage		13	.41	-	
Configuration	Sys Can	System Temp			Cood		-	
E-mail Test	Cab	dency			1.00	UU		
Notwork	10 (Chann	els					
Configuration	Ch	annel	Analog V	Digita In	al	Digital Out]	
DNP3 Modbus	СН1	1	0.0	OFF		OFF	1	
Configuration	CH2	2	0.0	OFF			1	
SNMP	СНЗ	3	13.1]	
Configuration	CH4	4	0.0					
SNMP MIB File	Test Status			OFF				
	UPS Mode			OFF				
Help	UPS Mode Status			OF	F			
Authorization	System Up Time: 7 Days 02:27							
About	Low	v Volta	ige Shutdo	own: D	isa	bled		

7.1.1 System Status Indicator

If the web browser has a connection to the unit, the system indicator will toggle between grey and green once a second.

7.1.2 Battery Voltage

This is the measurement of the battery voltage. Range 0.0 to 60.0V Remember to select the correct Battery voltage range for your BTRM on the Port Option Menu.

7.1.3 Battery Current

This is the measurement of the battery current. Range 0.0 to 20.0 Negative battery current → Battery is powering the load. Positive battery current → Battery is being charged. ±0.0 to ±20.0 Amps BTRM300 ± 0.0 to ±10.0 Amps BTRM400

7.1.4 Load Current

This is the measurement of the battery current. Positive Load current 0.0 to 20.0 Amps BTRM300 / 0.0 to 10.0 Amps BTRM400

7.1.5 Supply Voltage

This is the measurement of power supply voltage. Range 0.0 to 60.0V depending on selected range.

7.1.6 System Temperature

This is the BTRM temperature in °C.

7.1.7 Capacity

This is the measurement of the battery's capacity level. This capacity Good/Low status reading is present after the first test is completed.

7.1.8 IO Channel 1 – Analog V

This is the measurement of the voltage present at Channel 1 (ground referenced). Range 0.0 to 60.0V (regardless of range selected)

7.1.9 **IO Channel 1 – Digital In**

This is the logic setting for IO Channel 1 (see port options menu) TRUE/FALSE

7.1.10 IO Channel 1 – Digital Out

This indicates that the IO Channel 1 relay has been set to indicate a battery relate fault (see port options menu).

OFF The relay is set for normal operation.

ON The relay is set to indicate a battery fault as diagnosed by the BTRM.

7.1.11 IO Channel 2 – Analog V

This is the measurement of the voltage present at Channel 2 (ground referenced). Range 0.0 to 60.0V (regardless of range selected)

7.1.12 IO Channel 2 – Digital In

This is the logic setting for IO Channel 2 (see port options menu) TRUE/FALSE

7.1.13 IO Channel 3 – Analog In

This is the measurement of the voltage present at Channel 3 (ground referenced) Range 0.0 to 60.0V (regardless of range selected)

7.1.14 IO Channel 4 – Analog In

This is the measurement of the voltage present at Channel 4 (ground referenced) Range 0.0 to 60.0V (regardless of range selected)

7.1.15 System Voltage Type

The type of batter voltage the system is operating at. Not available on all modes – check the Port Options menu to confirm System Voltage Type

7.1.16 System Up Time

The time the system has been operational.

7.1.17 Test Status

This indicates ON if battery test is currently running, otherwise OFF.

7.1.18 UPS Mode

This indicates UPS mode has been enabled. If enabled systems transfer to battery automatically in the event of Supply loss.

7.1.19 UPS Mode Status

This indicates if the system is running from battery due to Supply loss.

7.2 Battery Status Page

	BT
ystem Status	Capacity Test Settings Results
attery Status	Tested at System Time (DDDD HH:MM):
attery Test	0009 22:56
lanual Test	At Average load in milliamps: 7000
ort Options	
Mail Configuration	28 °C
-mail Test	Current Status
letwork	Est Runtime HHHH:MM to 11.00 V or 22.00 V
Jonnyaration	0020:31
ONP3 Modbus	Minumum Runtime HHHH:MM
SNMP Configuration	20 Hours 30 Min
SNMP MIB File	Good
telp	
uthorization	
About	

7.2.1 Capacity Test Settings Results

This field displays the time stamp for the last battery capacity test was performed, the average load current, and the average enclosure temperature the test was performed at.

7.2.2 Current Status

This field displays the estimated time to perform the battery capacity test. The test is terminated when the battery voltage goes below 11 Vdc for a 12 Vdc system or 22 Vdc for a 24 Vdc system. This is based on the battery capacity curves for lead acid batteries and the average load current of the system. The field also displays the minimum run time for the battery capacity test and the status of the last test performed.

7.3 Battery Test Page

7.3.1 Type 1 Test

This test runs the attached load for a short period of time, dependent on the load power requirements and the battery Ahr rating. This can be anywhere between 1 hour to 4 hours. At the end of the test discharge profile of the battery is analyzed to give an expected run time (ERT)to low battery. This ERT is then compared with the customers minimum runtime (MRT)enter on the Type 1 settings page. If the battery's ERT does not meet the MRT, capacity is flagged as LOW, and relevant alarms are triggered.

7.3.2 Type 2 Test

This test runs the attached load for customer determined period or until a customer determined cutoff voltage is reached. The test result in both cases is the test duration and the Battery Voltage reached at test termination. This test can be flexibly used anywhere from being a short test to validate the system works on a daily basis (a requirement in some industries), or full test of the batteries capability by setting time to maximum, and battery cutoff to the lowest battery voltage allowed for system operation. Again, if the test conditions set are not met, relevant alarms are triggered.

Capacity Test Settings

Enable Capacity Test
Test Scheduled Every240HoursTime to Next Test69HoursO Type 1
Test the battery for a few hours (load dependent) Gathers battery discharge profile and calculate estimated run time
Minumum Runtime 20 Hours 30 Min
● Type 2
Test the battery for a specified period of time At end of test the battery voltage must be above the minimum voltage
Test Run Battery For600Minutes (max 999 minutes)Minumum Voltage Voltage10500in Millivolts at End of Test
Range for 12V System (12500 to 10500) Default for 12V System 11800
Range for 24V System (27000 to 21000) Default for 24V System 23600
Entries out of range return default values Update

8. Manual Test Page

This allows the user to manually start the battery capacity test at their discretion.

ventev		
	BTRM3	00
System Status	Manual Test	
Battery Status	Pottony Voltago must be greater than:	
Battery Test	12.40 V for 12V systems	
Manual Test	24.80 V for 24V systems	
Port Options	0 Manual Start Hours Delay	
E-Mail Configuration	Start Stop	
E-mail Test		
Network Configuration	Capacity IO Check	
DNP3 Modbus Configuration	Set Capacity to Nominal	
SNMP Configuration	Set Capacity below Nominal	
SNMP MIB File	Report Pattony Data and Sottings to Defaults	
Help	Reset Battery Data and Settings to Defaults	
Authorization	Reset Battery Data	
About		

8.1 Capacity IO Check

This can be used to nominal when the battery is replaced. Additionally, it can be used for test purposes by intentionally setting capacity below normal. This will trigger any configured IO alarm, send Battery below capacity email and also send DNP3 alerts if unsolicited messages are allowed, and or SNMP notification alerts.

8.2 **Reset Battery Data and Setting to Defaults**

This allows the user to reset the BTRM test parameters.

9. Port Options Page

This allows the user to enable the IO channels and the system operation voltage. Note that the BTRM400 has additional system voltages for 36V and 48V operation.

9.1 IO Channel 1



```
Enable Transfer to Battery if Load less than 11.0/22.0
```

Save

9.1.1 Analog Input 0-32V

This allows the user to enable an analog input level for triggering alarms from external sources (door switches, solid state relays, etc.).

9.1.2 Digital Input Alarm if < 1V

This allows the user to enable a digital input logic levels that is less than 1 volt to trigger an alarm from external sources (door switches, solid state relays, etc.).

9.1.3 Digital Input Alarm if > 2V

This allows the user to enable a digital input logic levels that is greater than 2 volt to trigger an alarm from external sources (door switches, solid state relays, etc.).

9.1.4 Low Capacity Alarm

This allows the user to enable the channel relay to indicate a battery relate fault

- Digital Out Normally Open: The relay closes when a fault is indicated.
- Digital Out Normally Low: The relay opens when a fault is indicated.

9.2 **IO Channel 2**

9.2.1 Analog Input 0-32V

This allows the user to enable an analog input level for triggering alarms from external sources (door switches, solid state relays, etc.).

9.2.2 Digital Input Alarm if < 1V

This allows the user to enable a digital input logic levels that is less than 1 volt to trigger an alarm from external sources (door switches, solid state relays, etc.).

9.2.3 **Digital Input Alarm if > 2V**

This allows the user to enable a digital input logic levels that is greater than 2 volt to trigger an alarm from external sources (door switches, solid state relays, etc.)

9.2.4 System Voltage

Allows the user to select whether the system operates at 12 V or 24 V.

9.3 Email Configuration Page

This page allows the user to configure information needed for the BTRM to access an email server and deliver messages to the destination email address along with two customizable text strings to provide additional situation detail in the email alert.

vertuev	
	BTRM30
System Status	Email Configuration
Battery Status	This page allows the configuration of the UPS Email settings.
Battery Test	Note: Fields are currently limited to 22 characters with 32 for Email Addr
Manual Test	Contact: "Who to Contact in an Alarm Condition" Location: "The Location of the UPS"
Port Options	SMTP Server: Typically in the form "xxx.xxx.com"
E-Mail Configuration	• To: Typically in the form "xxx@xxx.com" Enter the settings below:
E-mail Test	Contact: BTRM 213
Network Configuration	Location: 730 Northern
DNP3 Modbus Configuration	Port: 250
SNMP Configuration	Password:
SNMP MIB File	Email Addr: email@xxx.com
Help	
Authorization	Save
About	

9.3.1 Contact and Location

While these text strings that are included with outgoing email and SNMP notifications to aid in identifying the site location and manager, they can be used for any purpose. <u>Contact:</u> Enter the name of the contact person responsible for the site. <u>Location:</u> Enter a short description of the site location the BTRM is monitoring

The following information should be obtained from your Network Administrator to setup the SMTP server.

9.3.2 **Port**

Enter the Port number the SMTP server uses, select SSL if it uses Secure Socket Layer. Normally this port is 25. For secure server other port numbers are typically used such as Secure SMTP (SSMTP) - port 465 and Secure IMAP (IMAP4-SSL) - port 585.

9.3.3 User name and Password

If you are using your dedicated IP provider's internet service and its email server, you will likely leave these two items blank. If you are on a public network, most likely you will need to access a secure server using SSL. In this case the username and password will likely be required.

9.3.4 Server Address

This is the IP address or IP name of your outgoing email server. For example, Gmail's server is *smtp.gmail.com*

9.3.5 **Destination Email Address**

The BTRM will send the email notifications to this email address.

9.4 Email Test Page

Use this page to send a test email using the setting from the previous page.

If successful after several seconds, the web page will update to indicate that the message has been successfully sent. If the page does not refresh after a minute, then likely the message was not sent. Check you setting, and or try these setting using a laptop and its email client to verify the connection and settings.

ventev

		BTRM300	
System Status	Email Configura	tion	
Battery Status	This page allows the configuration of the UPS Email settings.		
Battery Test	Note: Fields are currently I	limited to 22 characters with 32 for Email Addr	
Manual Test	 Contact: "Who to Contact in an Alarm Condition" Location: "The Location of the UPS" 		
Port Options	SMTP Server: Typically in the form "xxx.xxx.com"		
E-Mail Configuration	• To: Typically in the f Enter the settings below:	orm "xxx@xxx.com"	
E-mail Test	Contact:	BTRM Contact	
Network Configuration	Location:	BTRM Location	
DNP3 Modbus Configuration	licer name:	Port: 25	
SNMP Configuration	Password:		
SNMP MIB File	Server Addr: Email Addr:	smtp.xxx.com	
Help			
Authorization		Save	
About			

9.5 Network Configuration Page

This screen allows you to configure the Network settings on the BTRM. **DO NOT** change any of the settings here unless you know what you are doing. These settings should be configured under the direction of your network administrator.

Multiple BTRM's could be active in the network at the same time. Each will have its own IP address to allow for remote access and monitoring.

To access any BTRM in the network, open a web browser and type the IP address of the BTRM into the address bar. Each BTRM should have their own unique address when they are part of the same network.

9.5.1 Host Name

This name can be used in place of the IP address to get access to the BTRM.

9.5.2 IP address, Gateway, Subnet Mask

Enter the settings to match your network system.

ventev

		BTRM300			
System Status	Board Configuration				
Battery Status	This page allows the configu	ration of the board's network settings.			
Battery Test	CAUTION: Incorrect settings may cause the board to lose network				
Manual Test	connectivity. Recovery of	stions will be provided on the next page.			
Port Options	Enter the new settings for th	Enter the new settings for the board below:			
E-Mail Configuration	MAC Address:	80:1F:12:88:92:48			
E-mail Test	Host Name:	BTRM			
Network	IP Address:	192.168.1.214			
Configuration	Gateway:	192.168.1.1			
DNP3 Modbus	Subnet Mask:	255.255.255.0			
Configuration	Primary DNS:	192.168.1.1			
SNMP	Secondary DNS:	0.0.0.0			
Configuration		Save Config			
SNMP MIB File	L	J			
Help					
Authorization					
About					

10. DNP3 and Modbus RTU Configuration Page

Selection and setup of DNP3 and Modbus Master and BTRM Device addresses and communications protocol selection.

Note:

- DNP3 features apply to BTRM units with firmware updated to v1.308 or later
- Modbus features apply to BTRM units with firmware updated to v1.500 and Web Version 2015-02-19 or later.

ventev

		BTRM30
System Status	BTRM Protocol Options	
Battery Status	○ None ○ DNP3	
Battery Test	Modbus Settings	
Manual Test	Device Address: 1	
Port Options	TCP/IP Port: 502	
E-Mail Configuration	DNP Settings	
E-mail Test	Master Address: 3	
Network Configuration	DNP3 Retry Sec: 10 (0 to 255)	
DNP3 Modbus Configuration	DNP3 Retries: 5 (0 to 254, 255 continuous)	
SNMP Configuration	Master IP: 20000	
SNMP MIB File	Device Messages	
Help	✓ Enable Unsolicited ✓ Enable Device Restart	
Authorization	IO Configuration	
About	○ RS232 Serial Baud 9600 Parity None (Typical Baud 9600, Parity - Modbus Even - DNP3 None)	
	● TCP/IP	
	Save	

10.1 Modbus Addressing

Device ID addressing supports values between 0 and 65535 (Default 001) TCP /IP Port also configurable (Default 502)

10.1.1 DNP Addressing

Master and Device addressing supports values between 0 and 65535. Confirm with your selected protocol what address values are allowable.

10.1.2 DNP Retry Settings

Retry settings for unsolicited messages range between 0 (no retries) and 254 with setting of 255 causing continuous retries. Elapsed time between retries 0 to 255 seconds (settings below 5 seconds not recommended).

10.1.3 DNP3 Communications Interface

TCP/IP Configurable: TCP/IP Port (Default 20000) Configurable: TCP/IP Unsolicited message destination IP address

10.1.4 MODBUS RTU and DNP3 over RS232

BTRM supports RS232 3 wire RS232 using standard connections pin 2, 3, and 5 on DB9 connector.

Baud Rates

Selectable at: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 Data Format: Data 8 bits, Stop Bits 1,

Parity Selection

ModbusTypical Parity: EvenDNP3Typical Parity: None

10.2 SNMP Configuration Page

Setting the community strings provides SNMP with basic password protection. User has a choice of 3 read only and 3 write only strings. Most SNMP browsers are configured to use the typical default strings, public, read, or write. When a string is changed, either read or write, the software used to connect to the BTRM must also use the same strings for read write access. If you wish to use SNMP alerts the Read and Write strings will need to be configured to match your network. These settings should only be changed by a Network Administrator or by someone who understands the proper settings for your network. Leaving a field blank will disable it.

ventev

	BTRM300				
System Status	BTRM SNMP Community Configuration				
Battery Status	Read/Write Community String configuration for SNMPv2c Agent.				
Battery Test	Configure multiple community names if you want the SNMP agent to respond to the NMS/SNMP manager with different read and write community names. If				
Manual Test	less than three communities are needed, leave extra fields blank to disable them.				
Port Options	Note: Community String are limited to 15 characters				
E-Mail Configuration	Read Comm1: public				
E-mail Test	Read Comm2 : read				
Network Configuration	Read Comm3 : Write Comm1: private				
DNP3 Modbus Configuration	Write Comm2: write Write Comm3: public				
SNMP Configuration	Save Config				
SNMP MIB File					
Help					
Authorization					
About					

SNMP MIB File Page

The BTRM is provided with a Management Information Base File (a text file ending in ".mib"). This file allows a MIB browser to translate the numeric OID numbers into text descriptions. This can be downloaded in the MIB browser from the BTRM firmware using this webpage.

ventev

			BT
System Status			
Battery Status	System: 730 Northern		
Battery Test	-		
succey rest	Status		
Manual Test	Battery Voltage	13.66	
Port Options	Battery Current	-0.06	
	Opening BTRM300A-2018-07-09.zip		
Configuration	You have chosen to open:		
-mail Tost	BTRM300A-2018-07-09.zip		
	which is: WinRAR ZIP archive		
twork	from: http://192.168.1.213		
onnguration			
NP3 Modbus	What should Firefox do with this fi	ile?	
onnguration	Open with WinRAR archive	r (default)	~
NMP	Save File		
omiguration			
NMP MIB File		OK	Cance
lelp			
	System Un Time: 1 Day	s 01:18	
uthorization		Displied	
About	Low voltage Shutdown	Disabled	

10.3 Help Page

This page provides the user default IP and SNMP notification setup information.

ventev				
	BTRM300			
System Status	Help			
Battery Status	Default UPS IP Addressing			
Battery Test	Hold Button PB1 15 to 20 seconds - LEDs will flash when reset complete			
Manual Test	• Unit IP: 192.168.1.214 • Gateway: 192.168.1.1			
Port Options	• Subnet: 255.255.255.0 • Primary DNS: 192.168.1.1			
E-Mail Configuration	Battery Test			
E-mail Test	To reset Default Battery settings: Hold Button PB2 15 to 20 seconds - LEDs will flash when reset complete IO channels The two IO1 and IO2 channels are multipurpose. They can be set as analog voltage monitors, alarm on digital input detection, or alarm out based on battery status. - Analog Voltage Range 0 to 32 volts This feature remains active in both digital modes - digital input			
Network Configuration				
DNP3 Modbus Configuration				
SNMP Configuration	Note: SNMP and Email mesages are not sent if digital alarm state changes are			
SNMP MIB File	(from a channel is in alarm state) every time the power is cycled.			
Help	SNMP Notification Setup To setup SNMP Notification destination IP addresses: use an SNMP Browser like the one from			
Authorization	http://www.ireasoning.com/ - then enable trapEnable.0 or trapEnable.1 by setting them to "1"			
About	 then set the corresponding trapReceiverIP Address 1 or 2 in standard dotted notation eq: "192.168.1.100" 			

10.4 Authorization Page

The Authorization Settings allow a user to prevent Webpage access unless a username and password are provided on the initial access. Passwords are case sensitive and limited to 15 characters.

BTRM300

10.4.1 **Default settings**

Enable Authorization: Not Enabled Web access to all pages (except Authorization): Not Restricted Access to the Authorization page: Always Restricted Default Username: admin Default Password: btrm

ventev

	_		
System Status	Au	thorizati	ion Configuration.
Battery Status			
Battery Test		Enable Authori	ization
Manual Test		User Name	admin
Port Options		Password	••••
E-Mail Configuration			Save
E-mail Test	User Name and Password are limited to 15 characters		
Network Configuration	If the user name and password are miniced to 19 characters If the user name and password are changed more than once from this page the most recently entered user and password may have to be reentered to accept new changes.		
DNP3 Modbus Configuration			
SNMP Configuration			
SNMP MIB File			
Help			
Authorization			
About			

10.4.2 User and Password Entry Window

If Authorization is enabled, or if Authorization page is accessed, then the following dialog box will appear.

Authenticatio	on Required
?	A username and password are being requested by http://192.168.1.219. The site says: "Protected"
User Name:	
Password:	
	OK Cancel

10.4.3 User and Password Reset

To reset the username and password the BTRM requires a hardware reset. See section 10.1 for details

10.5 **About**

.

This page provides the user with web page and firmware revision information.

ventev			
			BTRM300
System Status	About		
Battery Status	BTRM Web Version:	20191014	
Battery Test	BTRM Firmware version: BTRM Type:	v2.616 300 8030 Oct 14 2019 16:13:32	
Manual Test	BTRM HW Version: Build Date:		
Port Options			
E-Mail Configuration			
E-mail Test			
Network Configuration			
DNP3 Modbus Configuration			
SNMP Configuration			
SNMP MIB File			
Неір			
Authorization			
About			

11. SNMP Functionality

Network SNMP Monitoring

Simple Network Management Protocol (SNMP), used by most Network Operations Centers (NOC), is a protocol that allows the NOC to retrieve parameters, set parameters, and receive Alert Notifications from Ethernet connected appliances though a common interface and language. Each network appliance feature, that can be read or written to, will have a numeric string assigned to it. For example, system description (sysDesc) is .1.3.6.1.2.1.1.1.0.

For Network SNMP functionality, consult your network administrator for SNMP setup and configuration parameters and how the BTRM should be configured for your specific SNMP requirements and trap receivers.

SNMP Monitoring through a MIB Browser

In order to accept SNMP messages being sent from the BTRM you will need to have an SNMP monitoring system in your network or a MIB browser loaded onto your laptop.

A MIB browser can be used to capture SNMP traps in place of a network SNMP trap receiver. The MIB Browser can be loaded onto a PC or Laptop for monitoring of BTRM SNMP Traps. The MIB browser will need to be on the same network as the BTRM in order to receive the messages.

SNMP network access can be had from interfaces as simple as a command line interface available in Windows, Linux, and other operating systems, or using a dedicated software browser like the one shown below from iReasoning, available at www.iReasoning.com, to larger packages such as HP Openview designed to support and manage larger networks.

IMPORTANT: Once the MIB Browser is loaded you will need to load the BTRM MIB file. You can download the BTRM MIB file from the BTRM via the SNMP MIB file page on your web browser.

11.1 Install MIB Browser

- 1. Download MIB Browser from http://www.ireasoning.com.
- 2. Open MIB Browser Folder.
- 3. Click on the Setup.exe file.
- 4. Click Run and Follow the installation instructions.
- 5. Click Close when the installation has completed.
- 6. Launch the MIB Browser.

11.2 Install SNMP MIB File

- 1. In the MIB Browser Click on the File Tab.
- 2. Select Load MIBs.
- 3. In the Open Window, locate the file called btrm2_mib_yyyy-mm-dd.mib (This traps file should be located in the software files included with your BTRM).
- 4. Click on the btrm2_mib_yyyy-mm-dd.mib.
- 5. Click Open.

11.3 View BTRM via MIB Browser

1. Once the MIB browser is loaded, click on the desktop icon to launch it. You will see the main screen that should look like the one below. In the Address field type in the IP address of the BTRM, 192.168.1.214. Expand the folders on the left menu and highlight private.

IReasoning MIB Browser		
File Edit Operations Tools Bookmarks Hel	b	
Address: 192.168.1.214		ext 🗸 🌈 Go
SNMP MTRs	ult Table	
Name private	Name/OID Value	Type IP:Port
OID .1.3.6.1.4		
MIB Twinfalls		
Syntax		
Access		
Status		
DefVal 🕑		
.iso.org.dod.internet.private		

- 2. If you have changed the community strings from the default values, use the advanced menu item to update the browsers read write community strings to match the BTRM.
- 3. From the operations pull down menu, select "Walk" and click Go.

iReasoning MIB Browser			
File Edit Operations Tools Bookm	narks Help		
Address: 192.168.1.214	Advanced OID: 1.3.6.1.4 Result Table Name/OID	Volue Get Next Get Next Get Suk Get Subree Value Set	ort Q
Name private OID .1.3.6.1.4			
Name private OID .1.3.6.1.4 MIB Twinfalls			
Name private OID .1.3.6.1.4 MIB Twinfalls Syntax			
Name private OID .1.3.6.1.4 MIB Twinfals Syntax Access			
Name private OID .1.3.6.1.4 MIB Twinfals Syntax Access Status			

4. You should see data results begin to fill up in the main window Results Tab.

MIP MIBS MIB Tree iso.org			T open	
MIB Tree iso.org		Result Table		
iso.org 🕖 🗄		Name/OID	Value 🖉	Type IP:Port
🖭 📕 mgi	.dod.internet	sysDescr.0	BTRM	OctetStri 192.168.1
-	mt	sysObjectID.0	btrm	OID 192.168.1 🏁
E priv	rate	sysUpTime.0	3 minutes 51 seconds (23109)	TimeTicks 192.168.1
	enterprises	sysContact.0	BTRM contact	OctetStri 192.168.1
	btrm	sysName.0	BTRM name	OctetStri 192.168.1
	ti product	sysLocation.0	BTRM location	OctetStri 192.168.1 🥍
	e setup	name.0	0	Integer 192.168.1
	E Control	version.0	0	Integer 192.168.1
	lowBattCapacityaiarm	date.0	0	Integer 192.168.1
	TOChao Lalarm	trapReceiverNumber.0	0	Integer 192.168.1
	10Chan2alarm	trapReceiverNumber.1	1	Integer 192.168.1
	IOCHdrizalarm	trapEnabled.0	Yes (1)	Integer 192.168.1
	batten/Voltage	trapEnabled.1	Yes (1)	Integer 192.168.1
	batteryCurrentPositive	trapReceiverIPAddress.0	192.168.1.199	IpAddress 192.168.1
	batteryCurrentwegative	trapReceiverIPAddress.1	192.168.1.2	IpAddress 192.168.1
	powerSupply	trapCommunity.0		OctetStri 192.168.1
	expected kunnime	trapCommunity.1	in more dark	OctetStri 192.168.1
	LostKulli Inte	lowBattCapacityalarm.0	OFF (0)	Integer 192.168.1
	TOChan2analog	lowBatteryVoltagealarm.0	OFF (0)	Integer 192.168.1
	autombamparatura	IOChan1alarm.0	OFF (0)	Integer 192.168.1
	systememperature	IOChan2alarm.0	OFF (0)	Integer 192.168.1
	a simposin a simposin	batteryVoltage.0	12658	Integer 192.168.1
	a comm/2Dt0biact	batteryCurrentPositive.0	3391	Integer 192.168.1
	in 🖕 simposi vicobjeci	batteryCurrentNegative.0	0	Integer 192.168.1
		powerSupply.0	13121	Integer 192.168.1
		expectedRun1ime,0	16200	Integer 192.168.1
		LastRunTime.0	26004	Integer 192.168.1
		IOChan1analog.0	0	Integer 192.168.1
		IOChanzanalog.0	0	Integer 192.168.1
		systemtemperature.0	12 C	OctetStri 192.168.1

11.4 Configure Trap Receiver

In order to receive SNMP Traps (alert messages) you will need to setup your MIB browser to receive them. This means you need to setup your TrapReceiver so that the BTRM knows where to send the traps. So, in the next you will setup the TrapReceiver IP address. (You will set this to the IP address of your laptop that you recorded earlier).

1. In the Results Table locate the line that says trapReceiverAddress.0 , right click on the line and select "set."

ddress:	192.168.1.214 *	Advanced	OID: .1.3.6.1.4.1.34506.3.20.0	*	Operations: Walk		· 1	🗬 Go
SNMP ME	10		Result Table					
MIB Tr	ee		Name/OID	1	Value /	Type	IP:Port	0
a 🗼 iso.	org.dod.internet		sysDescr.0	STRM		OctetStri.	192.168.1	
۲	mgmt		sysObjectID.0	btrm		OD	192.168.1	2
9	private		sysUpTime.0	3 minutes 51 see	conds (23109)	TimeTicks	192.168.1	
🖻 🎍 enterprises 🖻 🎍 btrm 🕸 🎍 product			sysContact.0	BTRM contact		OctetStri 192.168.1		
			sysName.0	STRM name	OctetStri 192.168.1			
			sysLocation.0	STRM location		OctetStri.	192.168.1	Lorn 1
	🖲 🔔 setup		name.0	0		Integer	192.168.1	
	🕀 🌆 control	7.5	version.0	0		Integer	192.168.1	5
	lowBattCapac	tyalarm	date.0	0		Integer	192.168.1	
	IowBattery\		trapReceiverNumber.0	-		integer		2
	IOChan1ala		trapReceiverNumber.1	1 Get	Ctrl+G	nteger	192.168.1	
	IOChan2alarn		trapEnabled.0	1 Get Next	Ctri+N	nteger	192.168.1	
	batteryVoltag	8	trapEnabled.1	GetBuk	Ctrl+B	nteger	192.168.1	
	 batteryCurrent 	0°05/0ve	trapReceiverIPAddress.0		611.6	pAddress	192.168.1	
	DatteryCurren	triegative	trapReceiverIPAddress.1	1 241	COIPS	pAddress	192.168.1	
	powersupply	the second se	trapCommunity.0	Wak	Ctrl+W	ctetStri.	. 192.168.1	
	expectedicun	ane .	trapCommunity.1	End in Tree	North Arts	ctetStri	. 192.168.1	
	LastRunTime	2	lowBattCapacityalarm.0	3 restrict	possible carby	nteger	192.168.1	
	- IOChanitanaid	g	lovvBatteryVoltagealarm.0	K 700A		nteger	192.168.1	
	IOChanzanak	g	IOChan1alarm.0	4 Delete		nteger	192.168.1	
	systemtempe	roture	IOChan2alarm.0	OFF (0)		unteger	192.168.1	
	sninpusm		batteryVoltage.0	12658		Integer	192.168.1	Leses
	si simpirap	2	batteryCurrentPositive.0	3391		Integer	192.168.1	
	a) as semposivicoped	S	batteryCurrentNegative.0	0		Integer	192.168.1	
			powerSupply.0	13121		Integer	192.168.1	
			expectedRunTime.0	16200		Integer	192.168.1	
			LastRunTime.0	26004		Integer	192.168.1	
			IOChan1analog.0	0		Integer	192.168.1	
			IOChanZanalog.0	0		Integer	192.168.1	
			systemtemperature.0	12 C		Octetstri.	. 192.168.1	
	and the second se							
ame	batteryVoltage	_						
D	.1.3.0.1.4.1.34506.3.20							
08	DOTTO DOTTO							
YTTAX	read-only							
ccess	read-only							
cotus	monopury							
erval								
idexes	Battery Voltage in million	24						
eso	Battery voltage in milino	0						

2. Enter the IP Address of your PC or Laptop in the Value field and click OK. **Note:** In order to receive SNMP messages, the BTRM and the associated PC or Laptop must be on the same network or be able to communicate across networks. Verify connectivity by pinging the BTRM with your PC or laptop. If you receive a reply, you should be able to receive SNMP messages.

🕸 SNMP S	ET	×
		_
OID	.1.3.6.1.4.1.34506.2.1.1.3.0	
Data Type	IpAddress 🔹	1
Value	192. 168. 1. 199	
	Ok Cancel	

3. If your entry was successful, you will see a SET succeeded window.



11.5 Cannot Bind to Port 162 Error Message

Depending on your computer configuration you may get an error message pop up that says that you cannot bind to port 162. SNMP uses port 162 and sometimes Windows has an active SNMP server running that is using port 162. If you get this message you will need to follow the steps below to kill the process using the port.



Steps to shut down Application binding to Port 162

- 1. Load CurrPorts software Download CurrPorts software from http://download.cnet.com/CurrPorts.
- 2. Click on the cports.exe icon to launch the software



3. When the software opens click Run.



4. Locate the application that is using port 162 by finding it under the Local Port column. Click on the line to highlight it.

CurrPorts	CorrPorts										
Ele Edit Yew Or	tions He	þ									
× 🖬 🖻 🏵 🕯	7 1 1	- # A) ,1								
Process Name /	Proces	Protocol	Local Port	Local Por	Local Address	Remote	Remote	Remote Address	Remote Host Name	State	Process Path
alg.exe	3236	TCP	1033		127.0.0.1			0.0.0		Listening	C:\WINDOWS\Sys
Coprid.exe	728	TCP	62514		127.0.0.1			0.0.0.0		Listening	C: Program Files /C
Coprid.exe	728	UDP	62514		127.0.0.1						C: Program Files \C
DWRCS.EXE	820	TCP	6129		127.0.0.1	1038		127.0.0.1	localhost	Established	C:\WINDOWS\syst
DWRCS.EXE	820	TCP	6129		0.0.0.0			0.0.0.0		Listening	C:\WINDOW5\syst
DWRCST.exe	2912	TCP	1038		127.0.0.1	6129		127.0.0.1	localhost	Established	C:WINDOWS'syst
Pendpoint.exe	1176	TCP	10115		0.0.0.0			0.0.0.0		Listening	C: PROGRA~1Uxi
Pendpoint.exe	1176	UDP	10115		0.0.0.0						C: PROGRA~112xx
GravitxService	1692	TCP	1031		127.0.0.1	1068		127.0.0.1	localhost	Established	C: Program Files P
GravitixService	1692	TCP	4000		0.0.0.0			0.0.0.0		Listening	C: Program Files P
GravitixService	1692	TCP	1031		0.0.0.0			0.0.0.0		Listening	C: Program Files P
explore.exe	4168	TCP	19-48		127.0.0.1	6999		127.0.0.1	localhost	Established	C: Program Files Ur
explore.exe	4168	UDP	1070		127.0.0.1						C: Program Files Ur
Tios.exe	1232	TCP	5152		127.0.0.1	3862		127.0.0.1	localhost	Close Wait	C: Program Files U.
Tics.exe	1232	TCP	5152		127.0.0.1			0.0.0.0		Listening	C: Program FilesU
aucheck exe	4452	TCP	3710		127.0.0.1	6999		127.0.0.1	localhost	Established	C: Program FilesU
ucheck.exe	4452	TCP	3699		127.0.0.1	6999		127.0.0.1	localhost	Close Wait	C: Program Eles \1
LMS.exe	1300	TCP	16992		0.0.0.0			0.0.0.0		Listening	Ct/Program Files/Ur
LMS.exe	1300	TCP	16993		0.0.0.0			0.0.0.0		Listening	C: Program Files Vir
licass.exe	1957	LIDP	500	isakmo	0.0.0.0						C:WINDOWS'syst
lisass.exe	1952	LIDP	4500		0.0.0.0						C:WINDOWS\evel
Tomtsreco eve	1680	TCP	2030		0.0.0.0			0.0.0.0		Listening	C-locadeloca92lbi
Fi oddm eve	SORO	TCP	1068		122.0.0.1	1031		122.0.0.1	localhost	Established	C-Program Files P
somotran.exe	112	LIDP	162	semptrap	0.0.0.0						C:WINDOWS\www
sythest.eve	392	TCP	135	00030	0.0.0.0			0.0.0.0		Listening	C:WINDOWS\syst
Contract even	772	TCP	2869	shouth.	0.0.0.0			0.0.0.0		Listening	C-WINDOW/Sweet
Exchort eve	797	TCP	3380		0.0.0.0			0.0.0.0		Listening	C-WINDOWSwell
Suthast eve	452	UDP	123	070	192,169,1,199			1000			C-WINDOWSlevel
Surbost eve	452	IDP	123	000	127.0.0.1						C+WINDOWSlevel
Surbost eve	772	LIDP	1900		192 168 1 199						C+WINDOWS level
Towhost eve	452	LIDE	10.47		127.0.0.1						C+WITNDOWS/evel
Suthast eve	772	LIDE	1900		127.0.0.1						C+W/TNDOW/Slevel
@ System	4	TCP	445	microsoft	0.0.0.0			0.0.0.0		Lisbening	- hisson has
D System	4	TCP	190	nethine.com	107 168 1 100			0.0.0.0		Listening	
(i) Sustan	4	UDP	130	nathiord	102 160 1 100					Lorder Billy	
e aradan				110.0010-0	174. 000. 1. 199						
2											(e):

 Right click on the highlighted line (ensure you are on the line of the process using port 162) select "Kill Processes Of Selected Ports."

CurrPorts											- 7 🛛
Eile Edit View Qr	otions <u>H</u> elp										
🗙 🛄 🗟 🛞 🕯	7 🛪 🗈	18 A -) 📲								
Process Name 🔥	Proces	Protocol	Local Port	t Local Por	Local Address	Remote	Remote	Remote Address	Remote Host Name	State	Process Path
alg.exe	3236	TCP	1033		127.0.0.1			0.0.0.0		Listening	C:\WINDOWS\Sys
cvpnd.exe	728	TCP	62514		127.0.0.1			0.0.0.0		Listening	C:\Program Files\C
cvpnd.exe	728	UDP	62514		127.0.0.1						C:\Program Files\C
DWRCS.EXE	820	TCP	6129		127.0.0.1	1038		127.0.0.1	localhost	Established	C:\WINDOWS\syst
DWRCS.EXE	820	TCP	6129	<u>I</u> PNetInfo		Ctrl+I		0.0.0.0		Listening	C:\WINDOWS\syst
DWRCST.exe	2912	TCP	1038	Close Selected T	CP Connections	Ctrl+T		127.0.0.1	localhost	Established	C:\WINDOWS\syst
.■Pendpoint.exe	1176	TCP	10115	Kill Processes Of	Selected Ports			0.0.0.0		Listening	C:\PROGRA~1\Ixi
endpoint.exe	1176	UDP	10115	Toclude To Filter							C:\PROGRA~1\Ixia
GravitixService	1692	TCP	1031	Evolude In Filter				127.0.0.1	localhost	Established	C:\Program Files\P
GravitixService	1692	TCP	4000	Clear All Filters		F8		0.0.0.0		Listening	C:\Program Files\P
GravitixService	1692	TCP	1031 _	Cicci Arriters				0.0.0.0		Listening	C:\Program Files\P
explore.exe	4168	TCP	1948	Save Selected I	tems	Ctrl+S		127.0.0.1	localhost	Established	C:\Program Files\Ir
explore.exe	4168	UDP	1070	Copy Selected I	tems	Ctrl+C					C:\Program Files\Ir
jqs.exe	1232	TOP	5152	Copy Remote IP	Address	F2		127.0.0.1	localhost	Close Wait	C:\Program Files\J
jqs.exe	1232	TCP	5152	HTML Report - A	I I teme			0.0.0.0		Listening	C:\Program Files\J
jucheck.exe	4452	TCP	3710	HTML Report - S	elected Items			127.0.0.1	localhost	Established	C:\Program Files\J
jucheck.exe	4452	TCP	3699 _	TTTNE Report - a	elected riens			127.0.0.1	localhost	Close Wait	C:\Program Files\J
LMS.exe	1300	TCP	16992	Choose Columns	,			0.0.0.0		Listening	C: \Program Files \Ir
LMS.exe	1300	TCP	16993	Auto Size Colum	ns	Ctrl+Plus		0.0.0.0		Listening	C:\Program Files\Ir
sass.exe	1952	UDP	500 -	Process Propert	er	CHI10					C:\WINDOWS\syst
lsass.exe	1952	UDP	4500	Properties	C5	Alt+Enter					C:\WINDOWS\syst
omtsreco.exe	1680	TCP	2030	Figheriges		Aleffeliter		0.0.0.0		Listening	C:\oracle\ora92\bi
pddm.exe	5080	TCP	1068	<u>R</u> efresh		F5		127.0.0.1	localhost	Established	C:\Program Files\P
snmptrap.exe	112	UDP	162	sninptrap	0.0.0.0						C:\WINDOWS\syst
svchost.exe	392	TCP	135	epmap	0.0.0.0			0.0.0.0		Listening	C: \WINDOWS \syst
svchost.exe	772	TCP	2869		0.0.0.0			0.0.0.0		Listening	C:\WINDOWS\syst
svchost.exe	292	TCP	3389		0.0.0.0			0.0.0.0		Listening	C:\WINDOWS\syst
svchost.exe	452	UDP	123	ntp	192.168.1.199						C:\WINDOWS\syst
svchost.exe	452	UDP	123	ntp	127.0.0.1						C: WINDOWS (syst
svchost.exe	772	UDP	1900		192.168.1.199						C:\WINDOWS\syst
svchost.exe	452	UDP	1047		127.0.0.1						C: WINDOWS (syst
svchost.exe	772	UDP	1900		127.0.0.1						C:\WINDOWS\syst
	4	TCP	445	microsoft	0.0.0.0			0.0.0.0		Listening	
System	4	TCP	139	netbios-ssn	192.168.1.199			0.0.0.0		Listening	_
@ System	4	UDP	138	netbios-d	192.168.1.199						*
<		Ш			10-0-0						>
1753 Total Ports, 2 Re	emote Conne	ections, 1 Sele	ected		NirSoft	Freeware. http	://www.nirsof	Linet			
🛃 start 🔰	60	🛛 🖸 🔛	» 🬔		🚯 iReasonin	g M 🔣 G	TRM screen	CurrPorts	C 🛃 📓 🕄	2 - X % % %	🔒 🚟 🌄 9:51 AM

6. Select Yes on the window that asks if you want to kill the process.



7. You should now be able to return to the MIB browser and continue to open the Trap Receiver.

11.6 Open Trap Receiver

1. In order to see the SNMP alert messages coming in you will need to open the trap receiver Tab. To do this, in the MIB Browser, go to Tools and select Trap Receiver.

File Edit	Operations	Tool	s Bookmarks Help							
Address: 192.	168.1.214	4	Trap <u>R</u> eceiver	Ctrl+I	34506.2.1.1.3.0	~	Operations:	Walk	*	n Go
SNMP MIBs	ded interne		Trap Sender Ping		rap Receiver ×					-
iso.org	mt		Trace Route		1 16					
±- () <u>pr</u>	vate		Network Discovery Manage SNMPv3 USM Use Compare Devices	ers			Sourc	e	Time	
			Port View Switch Port Mapper							
			Device Snapshot Cisco Device Snapshot							
			Log Window							
		10	Options							
Name I	orivate		<u>^</u>							
DID .	1.3.6.1.4									
AIB Votex	wintalls									
Access										
Status										
DefVal			×							

2. You should now see a Trap Receiver Tab in the main window of the MIB Browser.

🚸 iReasoning MIB Browser	
File Edit Operations Tools Bookmarks Hel	p
Address: 192.168.1.214 V Advanced	. OID: .1.3.6.1.4.1.34506.2.1.1.3.0 🗸 Operations: Walk 🗸 🌈 Go
SNMP MIBs	Result Table Trap Receiver ×
¶ MIB Tree □ □ iso.org.dod.internet □ □ mgmt	Operations Tools
i⊞iîii private	Description Source Time
	Source lime
Name private	**
OID 1.3.6.1.4	
MIB Twinfalls	
Syntax	
Access	
Status	
Def/al	
PETTO I	,,

- 3. Now, in order to see the SNMP traps coming in you need to throw the BTRM into an alarm by removing one contact loop circuit at a time. There are various ways to break the contact loop circuit depending on the BTRM configuration.
 - a. Door Switch
 - i. Push the door switch in and hold for approximately 10 seconds. This simulates the enclosure door beeing closure.
 - ii. Release the door switch.
 - iii. In a few seconds you should see an SNMP message alert come into the trap receiver in the MIB Browser.
 - b. AC/DC OK Indication
 - i. When you remove the AC power from the enclosure, you should see an alarm on the BTRM.

File Edit Operations Tools Bookma	ks Help										
Address: 192.168.1.214 💌 Advar	ced OID: .1.3.6.1.4.1.34506	5.2.1.1.3.0			Operations: Walk	*	Go Go				
SNMP MIBs	Result Table Tra	Receiver ×			-						
🌳 MIB Tree ⊞ 🛅 iso.org.dod.internet.mgmt.mib-2	Operations Tools	Operations Tools									
		<i>4</i> 6 ~ 1	501WC0.		Time						
	Specific: 31-1-3-6-1-4-1	34506 192 168 1	214 2012-0	17-16 20:27:49							
	Specific: 2: .1.3.6.1.4.1.	34506 192,168,1,	214 2012-0	07-16 20:27:44							
	Specific: 1; .1.3.6.1.4.1.	34506 192.168.1.	214 2012-0	07-16 20:27:39							
		24506 102.169.1	214 2012-0	07-16 20:27:34							
	Speanc: 1; .1.3.6.1.4.1.	192,100,1,									
	Specific: 1; .1.3.6.1.4.1.	102 169 1 214	Timesterm	20 assanda	CNM ID Vansiani	,					
	Specific 1; 1.3.6.1.4.1.	192.168.1.214	Timestamp:	20 seconds	SNMP Version:	1	-				
	Specific: 1; 1.3.6.1.4.1. Source: Enterprise:	192.168.1.214 .1.3.6.1.4.1.34506	Timestamp:	20 seconds	SNMP Version:	1					
	Specific: 1; 1.3.6.1.4.1. Source: Enterprise: Specific:	192.168.1.214 .1.3.6.1.4.1.34506 3	Timestamp:	20 seconds	SNMP Version:	1					
	Specific: 1; 1.3.6.1.4.1. Source: Enterprise: Specific: Generic:	192.168.1.214 .1.3.6.1.4.1.34506 3 enterpriseSpecific	Timestamp:	20 seconds	SNMP Version:	1	-				
Name	Specific: 1; 1.3.6.1.4.1. Source: Enterprise: Specific: Generic: Variable Bindings:	192.168.1.214 .1.3.6.1.4.1.34506 3 enterpriseSpecific	Timestamp:	20 seconds	SNMP Version:	1					
Name OID	Specific: 1; 1.3.6.1.4.1. Source: Enterprise: Specific: Generic: Variable Bindings:	192.168.1.214 .1.3.6.1.4.1.34506 3 enterpriseSpecific	Timestamp:	20 seconds	SNMP Version:	I					
Name OID MIB Screture	Specific: 1; 1.3.6.1.4.1. Source: Enterprise: Specific: Generic: Variable Bindings: Name:	192.168.1.214 .1.3.6.1.4.1.34506 3 enterpriseSpecific .1.3.6.1.4.1.34506.2.1	Timestamp:	20 seconds	SNMP Version:	1					
Name OID MIB Syntax Arrees	Specific: 1; 1.3.6.1.4.1. Source: Enterprise: Specific: Generic: Variable Bindings: Name: Value:	192.168.1.214 .1.3.6.1.4.1.34506 3 enterpriseSpecific .1.3.6.1.4.1.34506.2.1 [OctetString] BTRM 10	Timestamp: 1.4.0 ccation, BTRM contact	20 seconds	SNMP Version:	1					

ALSO NOTE: The software alarms in the BTRM user interface and the SNMP alert messages, the BTRM is also sending out email message alerts to the email address that you configured in the email setup section.

Sreenshot of the System Status Screen showing alarm on IO Channel 1. The Digial In "TRUE" logic level indicates that the voltage thrush hold for the port has been met. An alarm message has been sent.

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tem Status		o			
tterv Status		System: 7	30 Norther	n	
ttery Test		Status			
nual Test		Dattory V	oltago		12.67
		Battery C	urront		-0.06
rt Options		Load Curr	ent		0.00
		Supply Vo	ltage		13.69
Mail Infiguration		System Te	emp		26 °C
		Capacity			Low
nail Test		. ,			1
		IO Chann	els		
onfiguration				Digit	al Digita
		Channel	Analog V	Ín	Out
23 Modbus		CH1	0.0	TRUE	OFF
nfiguration		CH2	0.0	OFF	
MP		СНЗ	13.4		
figuration		CH4	0.0		
		Tast Ctate			055
ND WTR Flie		UDS Mode	15		
p		UPS Mode	Status		OFF
		Custom II	n Timor O	David	14.24
horization		system 0	p nine: 0	Days	J4134
out		Low Volta	age Shutdo	own: D	isabled
	L				

Screenshot of SNMP Messages showing alarm on IO Channel 1. If you click on the SNMP messages you can read the detailed description including timesstamp and location the message was sent from.

Inn Window Halo	eader									
		3000						Tools	Sign	6
								toolo I	o.g.	
File Edit Operations Tools Bookmarks	Help									
Address: 192.168.1.214 Advanced.	. OID: .1.3.6.1.4.1.3450	6.2.1.1.3.0			▼ Operations: Walk	*	G 0			
SNMP MIBs	Result Table Tra	Result Table Trap Receiver X								
MIB Tree	Operations Tools									
B iso.org.dod.internet.mgmt.mib-2	0080	*								
	Descripti	ion	Source		Time					
	Specific: 3; .1.3.6.1.4.1.	.34506	192.168.1.214	2012-07-16 20:27:49	THIC					
	Specific: 2; .1.3.6.1.4.1	.34506	192.168.1.214	2012-07-16 20:27:44						
	Specific: 1: .1.3.6.1.4.1.	.34506	192.168.1.214	2012-07-16 20:27:39						
							-			
	Source:	192.168.1.21	4 Tim	estamp: 15 seconds	SNMP Version:	1	*			
	Source: Enterprise: Specific:	192 168 1 21 .1 3 6 1.4 1 3 2	4. Tim 4506	estamp: 15 seconds	SNMP Version:	I	1			
	Source: Enterprise: Specific: Ceneric:	192.168.1.21 .1.3.6.1.4.1.3 2 enterpriseSpe	4 Timo 14506 cific	estamp: 15 seconds	SNMP Version:	1	Å			
Name	Source: Enterprise: Specific: Ceneric: Variable Bindings:	192 168 1 21 1 3 6 1 4 1 3 2 enterpriseSpe	4 Tim 4506 cific	estamp: 15 seconds	SNMP Version:	1	4			
Name OD MB	Source: Enterprise: Specific: Generic: Variable Bindings: Name	192.168.1.21 .1.3.6.1.4.1.3 2 enterpriseSpe	4 Time 4506 cific	estamp: 15 seconds	SNMP Version:	1	<u>*</u>			
Name OD Syrbax Syrbax	Source: Enterprise: Specific: Generic: Variable Bindings: Name: Value:	192.168.1.21 .1.3.6.1.4.1.3 2 enterpriseSpe .1.3.6.1.4.1.3 [OctetStrine]	4 Tim 4506 cific 4506.2.1.1.3.0 BTRM location, B7	estamp: 15 seconds	SNMP Version:	1	<u>^</u>			
Name OD MB Syntax Access Status	Source: Enterprise: Specific: Ceneric: Variable Bindings: Name: Value:	192.168.1.21 .1.3.6.1.4.1.3 2 enterpriseSpe .1.3.6.1.4.1.3 [OctetString]	4 Tim 4506 cific 4506.2.1.1.3.0 BTRM location, BT	estamp: 15 seconds	SNMP Version: m	1				
Name OID MIB Syntax Access Status	Source: Enterprise: Specific: Generic: Variable Bindings: Name: Value:	192.168.1.21 .1.3.6.1.4.1.3 2 enterpriseSpe .1.3.6.1.4.1.3 [OctetString]	4 Tim 4506 cific 4506.2.1.1.3.0 BTRM location, BT	estamp: 15 seconds	SNMP Version:	1	A			
Name OID MIB Syntax Access Status	Source: Enterprise: Speefric: Ceneric: Variable Bindings: Name: Value:	192 168 1.21 .1.3.6.1.4.1.3 2 enterpriseSpe .1.3.6.1.4.1.3 [OctetString]	4 Tim 4506 cific 4506.2.1.1.3.0 BTRM location, BT	estamp: 15 seconds	SNMP Version: m	1	A			
Name OID MIB Syntax Access Status Status	Source: Enterprise: Specific: Generic: Variable Bindings: Name: Value:	192.168.1.21 1.3.6.1.4.1.3 2 enterpriseSpe .1.3.6.1.4.1.3 [OctetString]	4 Tim 4506 cific 4506.2.1.1.3.0 BTRM location, BT	estamp: 15 seconds	SNMP Version:	1				

Further Reading:

Douglas Mauro, Kevin Schmidt. Essential SNMP, Second Edition. O'Reilly Media, Inc.

12. Additional Protocols

DNP3

12.1 Overview

Distributed Network Protocol) is a set of communications protocols used between components in process automation systems. Its main use is in utilities such as electric and water companies. See www.dnp.org *f*or complete protocol details.

12.2 Data Link Layer

DNP3 Link Reset Supported

12.3 Application Layer

12.3.1 Function Support

Dec	Hex	Function
0	0	Confirm
1	1	Read
2	2	Write
5	5	Direct Operate
13	D	Cold Restart
15	F	Initialize Data
20	14	Enable Unsolicited

21	15	Disable Unsolicited
129	81	Response
130	82	Unsolicited Response

12.3.2 Enable Disable Unsolicited Event Status

BTRM allows enable and disable of unsolicited events. Status can be read from Binary Point 3

12.3.3 Groups and Variations

Object /Group	Object /Group	Туре	Variation	Description
01	Binary Input Status	Static	02	1 byte input status with flag
30	Analog Input Status	Static	04	16 bits without flag
10	Binary Output Status	Static	02	1 byte output status with flag
10	Binary Output Write	Static	01	Write using q00 start = stop
40	Analog Output Status	Static	02	16 bits with flag
41	Analog Output	Static	02	16 bits with flag 0x01
60	Class 1 Static Data	Static	01	Class 1 Data
60	Class 2 Event Data	Static	02	Class 2 Data

12.3.4 Qualifiers

Qualifiers (Hex)	Used In a request	Range	Index
00	a range of points or single point	8 bits	8 bits
06	all points range and index 8 bits	8 bits	8 bits
17	list of unrelated points	8 bits	8 bits

12.3.5 Binary Input Status Points

Point	Description	State	Value
0	Low Battery Capacity	Low	0x81
1	Low Battery Voltage	Low	0x81
2	DNP3 Unsolicited Enabled	Enabled	0x81
3	Aux IO Channel 1 Digital In	Tripped	0x81
4	Aux IO Channel 2 Digital In	Tripped	0x81
5	Any Fault Flag	Tripped	0x81

12.3.6 Analog Input Status Points

Point	Description	Units	
0	Battery Voltage	Millivolts	0 to3200 mv
1	Charger Voltage	Millivolts	0 to3200 mv
2	Battery Current	±Milliamps	± 32000 ma
3	Temperature	±°C	
4	Battery Minimum Runtime	Minutes	0 to 3200 minutes
5	Battery Runtime Estimate	Hours	
6	Battery Test Temperature	±°С	
7	Battery Test Schedule Time	Hours	0 to 500 hrs
8	Battery Test Next Time	Hours	0 to 500 hrs
9	Aux IO Channel 1 Voltage	Millivolts	0 to3200 mv
10	Aux IO Channel 2 Voltage	Millivolts	0 to3200 mv
11	Firmware Version	format xx.xx -> 1	30 = v1.30

12.3.7 Analog Output Status Points

Point	Description	State	
0	Battery Minimum Runtime	Minutes	0 to 3200 minutes
1	Battery Test Schedule Time	Hours	0 to 500 hrs
2	Battery Test Next Test Time	Hours	0 to 500 hrs
3	Aux IO Channel 1 Config	1,2,3	(see below)
4	Aux IO Channel 2 Config	1,2,3,4,5	(see below)
5	System Selection 12V /24V	1,2	1= 12v, 2 =24v

IO1	Function Control	Values 0,1,2,3,4
Read	Group 40 Variation 2	16bit Analog with flag
Direct Operate	Group 41 Variation 2	16bit Analog with flag
Direct Op Value		
0	Analog	
1	Digital Input Alarm if < 1v	
2	Digital Input Alarm if > 2v	
	Low Capacity Alarm	
3	Digital Out NC	
4	Digital Out NO	

IO2	Function Control	Values 0,1,2
Read	Group 40 Variation 2	16bit Analog with flag
Direct Operate	Group 41 Variation 2	16bit Analog with flag
Direct Op Value		
0	Analog	
1	Digital Input Alarm if < 1v	
2	Digital Input Alarm if > 2v	

12.3.8 Binary Output Status Point

Point	Description	State	Value	State	Value
0	Battery Data Reset	Session has Data	0x81	Data Empty	0x01
1	Battery LVD Status	LVD is enabled	0x81	LVD disabled	0x01
2	Battery Test Enable	Test is enabled	0x81	Test is disabled	0x01
3	Battery Start Test	Test running	0x81	Test not running	0x01

12.3.9 Binary Output Write to Points

Binary output points can be written to directly using Group 10 variation 01, using Qualifier 0x00 (8-bit index and range).

Points must be written to individually, using matching start and stop values, followed by the binary value "1" or "0" (See DNP_IEE-1815-2023 11.9.4.6)

To clear or enable write a "1", or to disable write a "0". An example to reset battery data, g10v01 q00 start 0 stop 0 value 1, would be to issue an application layer write command of the form: c5 02 0a 01 00 00 00 01

Point	Description	State	Value	State	Value
0	Battery Data Reset Battery LV Disconnect	Write to Enable	0x81	Write to Disabled	0x01
1	Enable	Write to Clear	0x81	Cleared	0x01
2	Battery Test Enable	Write to Start	0x81	Write to Stop	0x01
3	Battery Start / Stop Test	Write to Start	0x81	Write to Stop	0x01

12.3.10 Events

When Events are generated, they are reported via unsolicited messaging (if enabled), or queue to the event list for reading when polling for Class 2 data, or reading Binary events. Event points correspond to Binary Input Points.

Point	Description	State	Value
1	Low Battery Capacity Event	Tripped Event	0x81
2	Low Battery Voltage Event	Tripped Event	0x81
4	Aux IO Channel 1 Event	Tripped Event	0x81
5	Aux IO Channel 2 Digital In	Tripped Event	0x82

13. Modbus Protocols

Overview

MODBUS® Protocol, a messaging structure developed by Modicon in 1979, using a Master Slave approach. It is one of the simplest and widely adopted instrument automation protocols. Complete protocol details can be found at *www.modbus.org*

BTRM supports Modbus overRS232 Serial and TCP/IP for To configure the Modbus protocol please see section 7.9 for further details

Modbus Point Reference List Spreadsheet

Click on list below for Excel Spreadsheet version of the Modbus Point List



BTRM Modbus Points Listing V2020-04-20.zip

13.1 Function 01 Boolean (Coils) | Read Discrete Inputs

Point	Description	State	Value	State	Value
0	Battery Data Reset	Session has Data	0x01	Data Empty	0x00
1	Battery LVD Status	LVD is enabled	0x01	LVD disabled	0x00
2	Battery Test Enable	Test is enabled	0x01	Test is disabled	0x00
3	Battery Start Test	Test running	0x01	Test not running	0x00

13.2 Function 02 Input Status | Read Discrete Input

Point	Description	State	Value
0	Low Battery Capacity	Low	0x01
1	Low Battery Voltage	Low	0x01
2	DNP3 Unsolicited Enabled	Enabled	0x01
3	Aux IO Channel 1 Digital In	Tripped	0x01
4	Aux IO Channel 2 Digital In	Tripped	0x01
5	Any Fault Flag	Tripped	0x01

13.3 Function 03 Holding Registers | Read Single or Multiple

Point	Description	State	Value
0	Battery Minimum Runtime	Minutes	
1	Battery Test Schedule Time	Hours	
2	Battery Test Next Test Time	Hours	
3	Aux IO Channel 1 Config	1,2,3	
4	Aux IO Channel 2 Config	1,2,3,4,5	
5	System Selection 12V /24V	1,2 (12v/24v)	12v/24v

13.4 Function 04 Input Registers | Read Single or Multiple

Point	Description	Units
0	Battery Voltage	millivolts
1	Charger Voltage	millivolts
2	Power Supply Voltage	millivolts
3	Battery Current	milliamps
4	Temperature	°C
5	Battery Minimum Runtime	Minutes
6	Battery Runtime Estimate	Minutes
7	Battery Test Temperature	°C
8	Battery Test Schedule Time	Hours
9	Battery Test Next Time	Hours
10	Aux IO Channel 1 Voltage	millivolts
11	Aux IO Channel 2 Voltage	millivolts
12	Firmware Version	integer

13.5 Function 05 Boolean (Coils) | Write Discrete Output

Point	Description	State	Value	State	Value
0	Battery Data Reset	Write to Enable	0x01	Write to Disabled	0x00
1	Battery LV Disconnect Enable	Write to Clear	0x01	Cleared	0x00
2	Battery Test Enable	Write to Start	0x01	Write to Stop	0x00
3	Battery Start / Stop Test	Write to Start	0x01	Write to Stop	0x00

13.6 Function 06 Holding Register | Write Single

Point	Description	State	Value
0	Battery Minimum Runtime	Minutes	
1	Battery Test Schedule Time	Hours	
2	Battery Test Next Test Time	Hours	
3	Aux IO Channel 1 Config	1,2,3	
4	Aux IO Channel 2 Config	1,2,3,4,5	
5	System Selection 12V /24V	1,2 (12v/24v)	12v/24v

14. Additional Network Setup

14.1 IP Reset

To reset the device to its default IP address settings, hold Button PB1 for 20 seconds. All the LEDs will flash, and the unit will restart with the default IP settings listed on the device label.

Typically, these settings are:			
Unit IP	192.168.1.214		
Subnet Mask	255.255.255.0		
Gateway	192.168.1.1		

Additionally, the IP reset function resets the Authorizations settings to Default

14.2 Router Ports

If you need to access the device from outside of a local intranet (hosts computer is on the WAN side of the device router), the appropriate ports will need to be set on the router to which the host computer is attached and also the router to which the device is attached.

One solution:

Routers allow a single device to be set so that it can be reached by using the router's IP address. The same can be done for the host computer, sometimes called "placing the device in the demilitarized zone" (DMZ). Not as secure, but much simpler as ports do not need to be forwarded. In this case the device IP \Leftrightarrow the Router WAN IP.

Opening Ports Method:

When accessing the device from behind a router the device LAN IP address is effectively hidden. In this case the port number is used to determine the final destination. Only the WAN IP address of the router is reachable. The host computer then uses the router WAN IP as the destination IP address.

The Router then uses the messages destination port, and the routers port forwarding table to direct to the appropriate device on the internal intranet.

For example: Host Computer has internal LAN IP of 192.168.1.214 Its Router has WAN IP of 100.78.60.21

Device issues a SNMP notification to 100.78.60.21:162 (where 162 is the port number)

The Router is the message destination. The Router looks at the message's port, checks its port forwarding table to see if the UDP port 162 is forwarded to a local LAN IP address. If so, delivers it to that IP address (in this case the Host Computer), otherwise the message is discarded.

14.3 Port Table

Function	Default P	Default Port Values	
	TCP/IP	UDP	
Web Page Access (http)	80		
SNMP Management Access		161	
SNMP Notifications		162	
Email ¹			
DNP3 ¹	20000		
Modbus ¹	502		
Firmware Update		16384	
(1) Port is user selectable			

15. Specifications and Warranty

Electrical Specifications	BTRM300	BTRM400		
Operating Voltage	9 to 30 VDC	9 to 60 VDC		
Battery Max Current	20A	10 A	Continuous	
Charger Max Current	20A	10 A	Continuous	
Load Max Current	20A	10 A	Continuous	
Battery and Charger				
Voltage Measurement	0 to 60V ± 1%			
Current Measurement	0 to 20 Amps ± 1%			
<u>Environmental</u>				
Temperature	-20° C to +60° C			
Humidity	5 % to 95% Non-Condensing			
Mechanical				
Size	6.25" H X 2.8" D X 1.2" W			
Weight	5.0 oz (142 g)			
Mounting	Spring-Loaded Din rail mounting clip			
Warranty	One Veer Peer			
wananty	No Warranty on systems deemed to have reversed wiring or over			

Note: Specifications subject to change without notice.