INSTALLATION GUIDE

Cloud Installation Guide

Cloud-Based Monitoring for New & Existing Basement Pump Systems

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NEWTON CLOUD

POWERED BY 3ms

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Newton House, 17-19 Sovereign Way
Tonbridge, Kent, TN9 1RH

www.newtonwaterproofing.co.uk
tech@newtonwaterproofing.co.uk
+44 (0)1732 360 095

Opening Hours:
Monday to Friday 8am - 5pm

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SECTION 1. INTRODUCTION OF THE NEWTON CLOUD INSTALLATION SYSTEM

Introducing a ground breaking new range of cloud-based pump monitoring and control units from Newton Waterproofing Systems.

Their advanced capabilities bring a state-of-the-art level of intelligence to new and existing pumping systems, accessible through Newton's cloud-based monitoring platform.

The platform, alongside a mobile app, provides a catalogue of live and historical data, including pump operation and health; alarm events and warnings; drainage channel high water levels; and inverter and battery health data.

Remote monitoring also enables easy access for service engineers, minimising costly site visits. The system even checks for upcoming weather events and monitors the overall system health in advance of approaching storms.

Say goodbye to reactive maintenance. Say hello to proactive, real-time, and intelligent monitoring. Trust Newton to ensure the integrity of all aspects of your waterproofing system, wherever you are in the world.

SECTION 2. SYSTEM OVERVIEW

The Newton Cloud pump monitoring and notification system provides real-time monitoring of your basement pumping system, delivering alerts for critical events directly to your mobile device. This integrated system combines hardware components with our cloud platform to provide early warning of potential issues.

2.1. SYSTEM COMPONENTS

- **Cerbo GX MK2** - The central hub connecting your pump equipment to the Newton Cloud platform
- **Water level switches** – For placement within the sump chamber for communication with Cerbo GX MK2
- **Optional CDM BaseDrain float units** - Specialised switches for monitoring water levels in perimeter drainage channels
- **Newton Cloud platform** - Secure online service for data processing and notification delivery
- **Mobile application** - Access to system data and notifications on your smartphone or tablet

2.2. HOW THE SYSTEM WORKS

The Cerbo GX MK2 serves as the interface between your physical pumping system and the cloud platform. It collects data from connected components and securely transmits this to the Newton Cloud via your internet connection. The platform analyses this information, triggering email and push notifications when needed.

2.3. WHICH PRODUCT IS RIGHT FOR YOU?

Newton Pulse

- Ideal for new installations requiring direct monitoring
- Includes water level float switches which are directly connected to the Cerbo GX MK2
- Monitors sump water levels with optional floats available for monitoring high water levels within perimeter drainage channels
- Provides a record of all pumping actions and water volume pumped over a selected time period
- The data connection to the server is monitored and connection loss is monitored in real-time and recorded on the system

Newton Bridge

- Perfect for integrating with existing pump systems
- Connects to voltage-free relay outputs on current panels
- Compatible with High Water Level Alarm, CP2/CP9 Controllers, NEX-CDM Control Panel, and other alarm and control systems from other manufacturers and suppliers

Note: The cloud licence is billed annually per unit, with the first year included when you purchase a Pulse or Bridge device. Subsequent renewals are charged each year to maintain access to cloud-based features and support. Please note that the annual licence fee is subject to periodic review and may change.

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2.4. BATTERY BACKUP INTEGRATION

Both systems can connect to Victron battery backup systems, providing additional capabilities:

- Battery state of charge and health monitoring
- Real-time electrical readings
- Power outage detection, recording and notification
- Performance history and runtime estimation and warnings during power outages

By selecting the appropriate Newton monitoring solution, you can ensure your basement waterproofing system remains reliable, with early identification of potential issues to protect your property from water damage.

SECTION 3. HARDWARE INSTALLATION

3.1. INSTALLING THE CERBO GX MK2

The Newton Pulse is packaged with the following items:

- Cerbo GK M2 unit
- 2 x finger float switches
- 2 x Ethernet cables
- Optional 2 x vertical type, perimeter drainage switches – if ordered
- Optional 12V DC power supply - if ordered
- Optional 4G router – if ordered

Unbox the Cerbo GX M2 unit. The Victron box contains the following:

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3.2. POWERING THE CERBO GX

The device is powered by using the Power in V+ connector. It accepts 8 to 70V DC. The device cannot be powered from any of the other connections.

The supplied DC power cable includes an inline 3.15A slow blow fuse. If the DC voltage exceeds 60V, the Cerbo GX is classified as a "built-in product". Installation should be in such a way the user cannot touch the terminals.

The included power cable with inline fuse is intended for direct connection to the terminals of the large DC battery of the battery backup systems where installed.

If no battery backup system is present within the system, then the optional DC power supply should have been purchased at the time of order and included within the packaging. If this was overlooked, this will need to be purchased separately. Purchase code PA7.

Use a small flat bladed screwdriver to push onto the orange tabs to open terminals and remove the battery lead. Then, repeat this process and insert the ferruled ends of the supplied two-core power cable into the 2-pin power block, ensuring that polarity is correct. Red = positive (+) and black = negative (-).

Where the optional 12VDC power supply is used, using the screwdriver to open the terminals, insert the stripped ends of the two-core cable into the terminal block, ensuring that the intermittent white striped cable is within the positive (+) terminal.

Polarity is confirmed on the front of the unit, above the respective terminal connectors.

Check polarity is correct and then insert the power block into the two-pin power terminal of the Cerbo, which is the furthest right of the terminals.

Within a few seconds the unit will power up, indicated firstly by the WIFI Access Point light flashing orange and then green, followed by the blue Bluetooth LED. If the unit does not power-up, check polarity.

SECTION 4. CONNECTION TO THE INTERNET

The Cerbo GX requires a reliable internet connection to communicate with the Newton Cloud platform. For optimal performance, we recommend the following:

Ethernet connection (preferred method)

- Connect directly to your router or network switch
- Provides the most stable and reliable connection
- Use the supplied RJ45 cable for connection

Wi-Fi connection (alternative option)

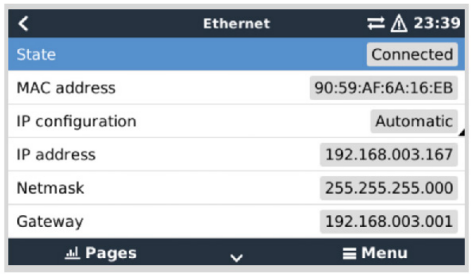
- Available when wired connection isn't possible
- Requires adequate signal strength in the installation area
- May be less reliable than a wired connection

4G connection (backup option)

- Available with optional 4G router.
- Provides fallback connectivity during primary connection failures
- Particularly valuable for critical installations
- Requires active data SIM card (not included)

4.1. ETHERNET CONNECTION

When connecting via Ethernet ensure you are connecting into the Ethernet port of the Cerbo GX and not into the VE.Bus or VE.Can/BMS-Can ports. Once the connection has been made it is possible to confirm active connection on the Settings > Ethernet page of the Cerbo GX menu. This menu can be accessed by connecting a screen to the HDMI port of the Cerbo GX. A keyboard plugged into the one of the USB ports can be used to navigate this menu.



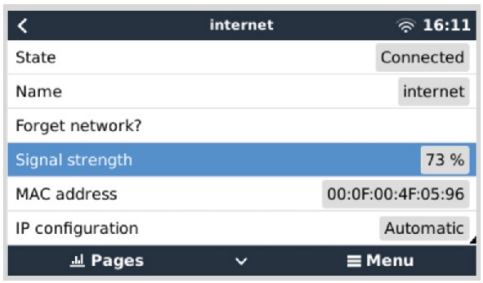
4.2. WI-FI CONNECTION

The Cerbo GX includes built-in Wi-Fi connectivity. Using Wi-Fi it is possible to connect the WEP, WPA and WPA2 secured networks.

The Wi-Fi menu shows the available networks. When the network is selected it is possible to fill in the password to connect to the network (network settings are saved internally so the Cerbo GX will automatically reconnect). Setting up via WPS is not supported.

When the Cerbo GX finds multiple Wi-Fi networks of which the password is known, the strongest network is selected automatically. When the signal of the connected network becomes too weak, it will automatically switch to a stronger network – if it knows the password of that network.

Wi-Fi is an inherently less reliable connection than a hardwired Ethernet cable. It should always be a preference to connect via Ethernet when possible. Signal strength should always be at least 50%.



4.3. MANUAL IP CONFIGURATION

Almost no installations will need the IP address configuration to be inserted manually as most systems support automatic IP configuration (DHCP) – and that is also the Cerbo GX default setting.

If you do need to configure the address manually, this can be done via the Settings > Ethernet page of the Cerbo GX menu.

4.4. MULTIPLE CONNECTION (FAILOVER)

It is possible to connect to the Cerbo GX to multiple networks simultaneously, Ethernet, Wi-Fi and LTE In this case, the GX device uses Ethernet or Wi-Fi whenever available and falls back to LTE if the Ethernet connection is lost and Wi-Fi access isn't available.

The priority of which connection the GX devices uses is based on the following order:

1. Ethernet, regardless of whether there is a Wi-Fi or LTE connection.
2. Wi-Fi when there is no Ethernet connection and regardless of whether there is an LTE connection.
3. LTE when there is no Ethernet or Wi-Fi connection.

SECTION 5. CONNECTION TO VICTRON MULTIPLUS INVERTER CHARGER

To connect your VE.Bus enabled Victron inverter charger use a standard RJ45 UTP cable (included) to connect either of the VE.Bus ports on your inverter and also to either of the VE.Bus ports on the Cerbo GX.

Only one VE.Bus system can be connected to the VE.Bus ports on the Cerbo GX. To monitor more than one system add additional Cerbo GX units.

5.1. DIGITAL INPUTS

The Cerbo GX has four digital inputs which are used for connection of float switches to communicate with Newton Cloud.

1. The inputs are set as follows:
2. High-level float switch
3. Pump operation count float
4. CDM BaseDrain float 1
5. CDM BaseDrain float 2

Connection can be made using the connector block provided. To insert cables into the connector, use a small flat bladed screwdriver to depress the orange lever as you push the cable into the adjacent terminal hole.

The terminals are designed to take both solid and stranded conductors. Bootlace ferrules can be added if preferred.

5.2. FLOAT SWITCH INSTALLATION

Broken finger float switches are used to provide digital inputs for both high water events and pump operation count with the Newton Cloud.

These switches are supplied with double clips and cable ties for secure mounting to the vertical discharge pipes within the sump chamber.

Wrap and tighten the cable tie around a pump vertical discharge pipe and the clip so as to secure the clip. Push the threaded barrel of the switch onto the still available second clip to secure the switch to the discharge pipe. Tighten the nut to further secure.

It is important that the switch is fitted in the correct orientation so that the switch is normally closed and becomes open when lifted by rising water.

5.3. FLOAT SWITCH POSITION

It is important to ensure the correct height of the float switches within the pump chamber for correct notification and monitoring.

The high-water switch should be positioned so that it operates after the pump should have operated, where two pumps are fitted this should be between the points where the two pumps run so the switch operates after the first pump should have operated, not after the second pump operates.

The sequence of switching should be Pump 1 > High Water > Pump 2.

The pump operation count switch should be positioned within the zone which fills and empties during each cycle. The system monitors for a state of change and can therefore sit anywhere within this zone.

5.4. FLOAT SWITCH CABLE ROUTING

The float switches for the Newton cloud are rated as extra low voltage. This means they must not be run through the same conduit as mains rated cabling without increased mechanical protection.

We advise that they should be taken through a separate conduit from the sump to the Cerbo GX location.

5.5. FUNCTIONAL TESTING OF INPUTS

It is possible to test the function of your digital input connections by monitoring their status in the menu of the Cerbo. To do this you need to connect an HDMI screen and a keyboard to the Cerbo.

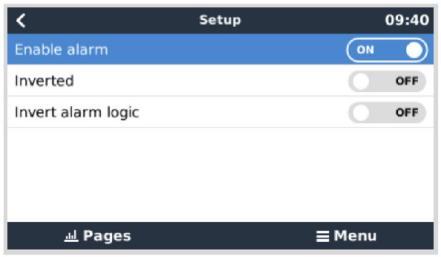
With the screen turned on you will be able to view the menu structure of the Cerbo. Navigate to the I/O section where you will be able to view the status of each input.

Activate each input in turn and check they change state on the screen, this indicates that all connections are correctly made.

5.6. TESTING CONNECTION TO NEWTON CLOUD

The simplest method for confirming a live connection to the Newton Cloud is to operate one of the alarm inputs and check that the input status changes on your online dashboard. Alternatively, you can check for notification on your mobile device.

If access to alarm floats is difficult due to sump location then you alter the status of the input from the menu of the Cerbo GX. Navigate to I/O > Digital Inputs. From here you can change the 'Inverted' status and this toggles an alarm.



SECTION 6. RETROFIT CONNECTION TO EXISTING SYSTEMS

Existing systems can be connected to Newton Cloud by using the alarm output of any existing system to provide a relay contact to provide a signal for notifications.

This connection should be made into digital input 1 of the Cerbo GX. No further digital input connections are required. If it is possible to gain access for wiring of pump count float or CDM BaseDrain floats this can still be done to enhance the features of your system.

The digital inputs of the Cerbo GX are non-isolated. They operate 3V3 levels and can withstand up to 5V input. They should be connected to potential free relay or otherwise open collector/ optocoupler output.

Below are steps for connection to existing Newton control panels and high-water level alarms. For connection to non-Newton products please use a suitably rated relay output.

- High Water Level Alarm - connect an additional twin core into the alarm float terminals along with the float cable. Run this twin core cable to digital input 1 of the Cerbo GX.
- Newton Pump Controller - connect an additional twin core into the alarm float terminals along with the float cable. Run this twin core cable to digital input 1 of the Cerbo GX.
- CP2 - connect an additional twin core into the alarm float terminals along with the float cable. Run this twin core cable to digital input 1 of the Cerbo GX.
- NEX Control Panel – connect a twin core cable across terminals labelled 'RC' & 'ALM', run this cable back to digital input 1 of the Cerbo GX. If there are no CDM BaseDrain floats installed with this panel, then you can use the spare CDM BaseDrain float terminals of the Cerbo GX to provide monitoring for Pump 1 and Pump 2 fault. To do this, digital inputs 3 and 4 should be connected 'RC' & 'P1' and 'RC' & 'P2' respectively. These digital inputs should then be renamed in the Cerbo GX menu.

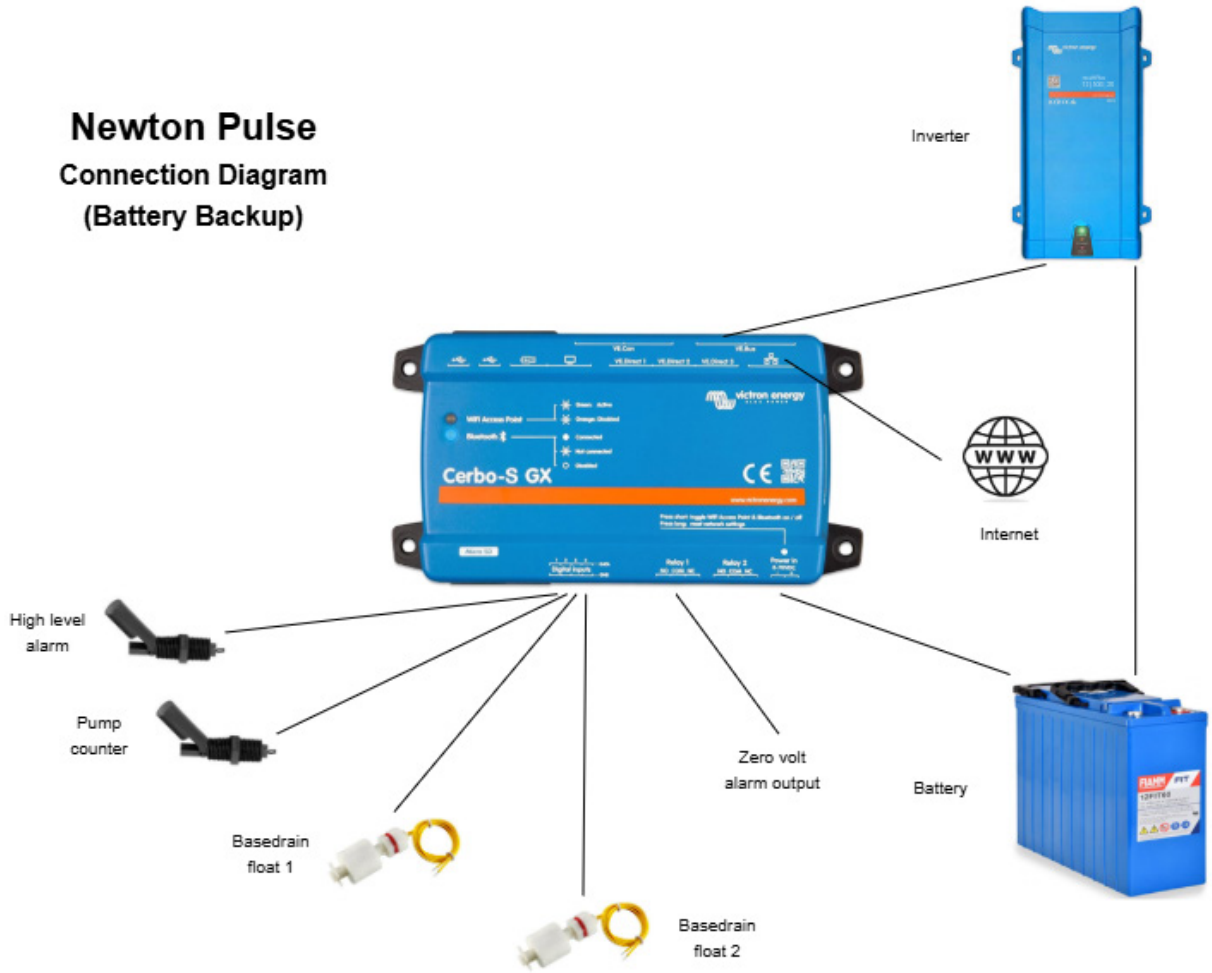
SECTION 7. CONNECTING EXTERNAL EQUIPMENT VIA RELAY OUTPUT

The Cerbo GX is equipped with two relay outputs. Relay 1 is pre-configured as an alarm output. They provide a persistent output and can be connected either as normally open or normally closed.

Using these relays it is possible to provide a potential free output to BMS and external alarm systems. If you would like to add an external audible or visual beacon this can also be done using these relay outputs.

SECTION 8. APPENDICES

The diagrams provided below are model layouts; alternative connection configurations may be suitable depending on the installation - please contact our technical team for further guidance.



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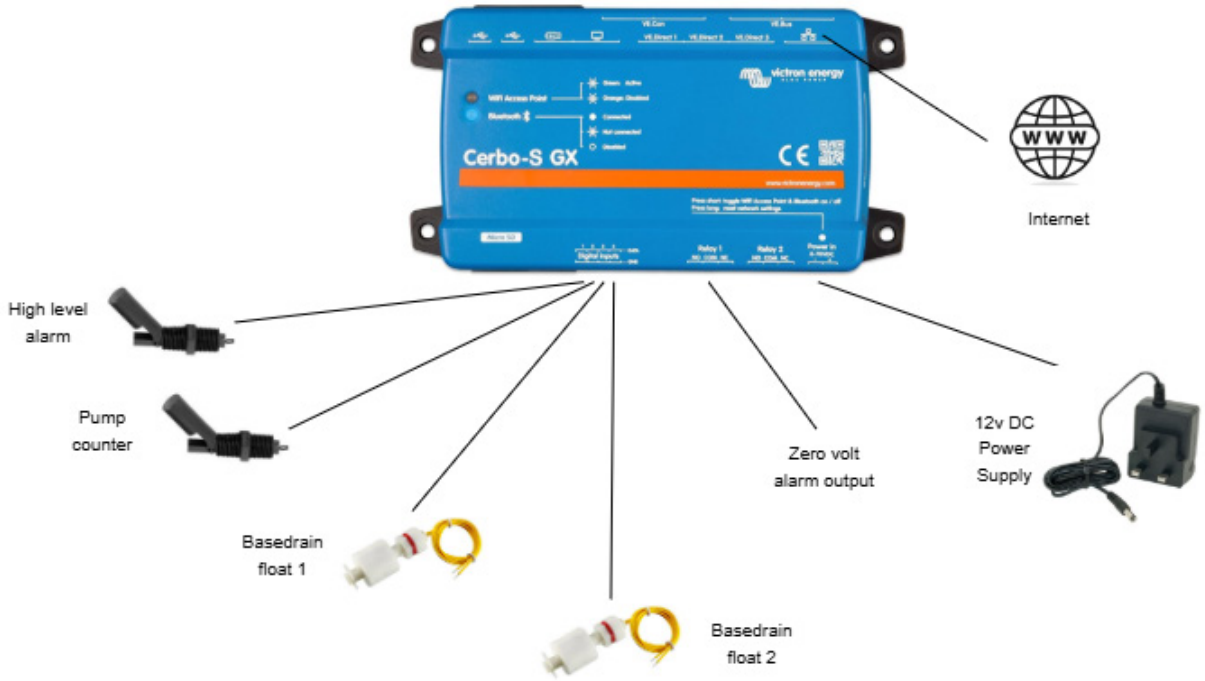
SECTION 8. APPENDICES CONTINUED

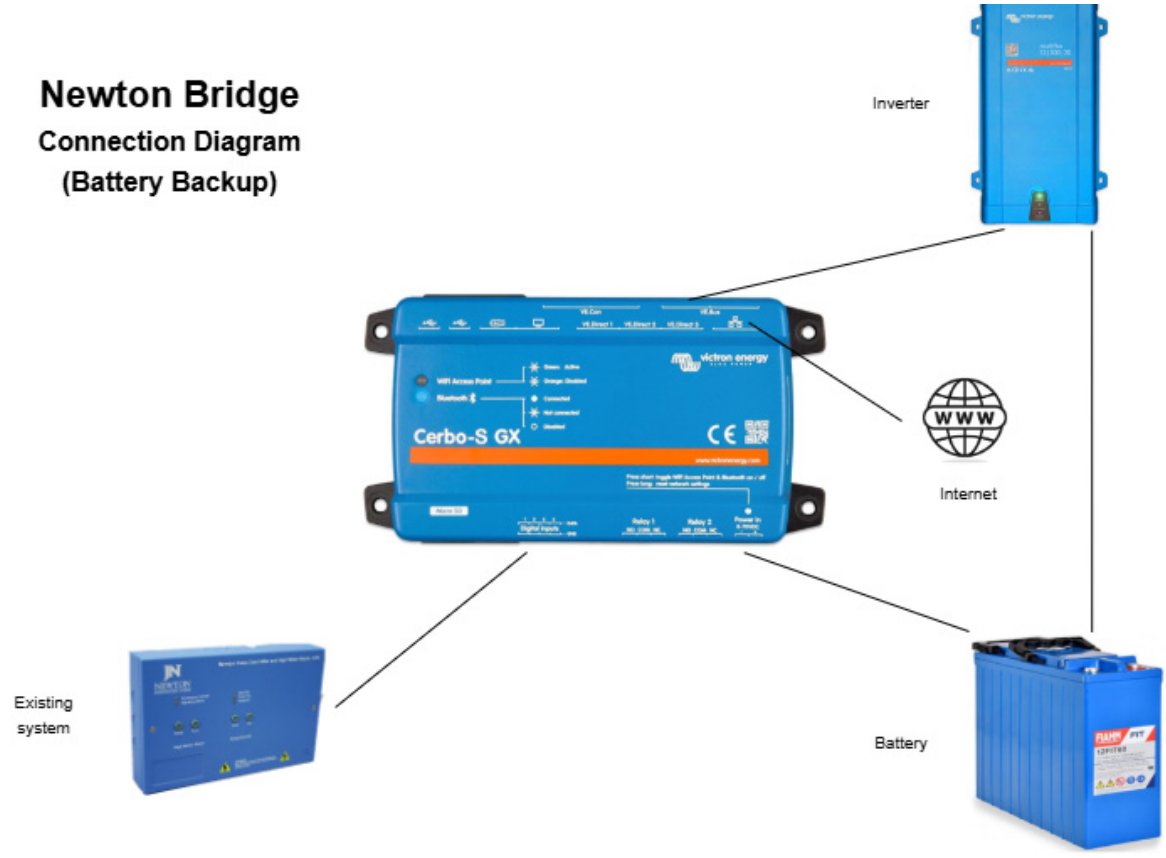
Newton Pulse

Connection Diagram
(without Battery Backup)



Newton Bridge

Connection Diagram
(Battery Backup)



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SECTION 9. TECHNICAL DATA

Cerbo GX	
Supply Voltage	8-70V DC
Mounting	Wall or DIN rail (35mm)
Communication Ports	
VE.Direct ports (always isolated)	3 (max. possible VE.Direct devices 15)
VE.Bus (always isolated)	2 paralleled RJ45 sockets
VE.Can	Yes - non isolated
BMS-Can port	Yes
Bluetooth	Yes
Bluetooth Frequencies and Power	2.402 - 2.48GHz | 5.2mW
WiFi	Yes
WiFi Frequencies and Power	2.4 GHz WiFi | Range: 2.412 - 2.462 GHz | 88.1mW
IO	
Resistive Tank Level Inputs	4
Temperature	4
Digital Inputs	4
Relays	2 x NO/NC DC up to 30VDC: 6A DC up to 70VDC: 1A AC: 6A, 125VAC
Other	
Outer Dimensions (H x W x D)	78 x 154 x 48mm
Operating Temperature Range	-20 to +50°C
IP Rating	IP20
Standards	
Safety	IEC 62368-1
EMC	EN 301489-1, EN 301489-17
Automotive	ECE R10-6

Your Cloud System is now fully online and operational. If you have any further questions or require assistance, please don't hesitate to contact our technical team.

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