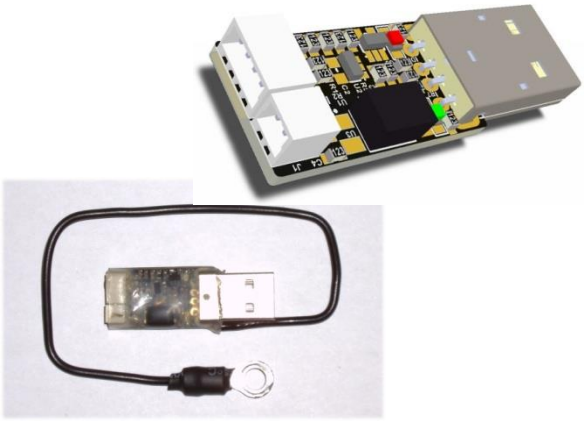
# IsoMon – Isolated Monitor Interface Bridge

- **Interfaces the battery CellMon network.**
- **Connects to PacMon or SiMon.**
- **Greater than 1000 volts isolation.**
- **Provides chassis ground point.**
- **Blocks RF noise.**
- **Sealed in robust plastic (adds safety).**
- **Red and green LEDs for instant diagnostics and status.**
- **Compact in-line cable design to fit anywhere.**
- **Uses common "USB" type interface cable.**



IsoMons provide an opto-isolated interface to the LongMon or BlockMon Battery Angel™ networks provided by Batrium. It is a compact interface that has data filtering suited for high electrical noise environments. It is robustly packaged in plastic insulation with an earth strap at the battery pack that keeps catastrophic fault currents local for minimal damage. IsoMon uses a convenient "USB" cable interface connecting to PacMon or SiMon.

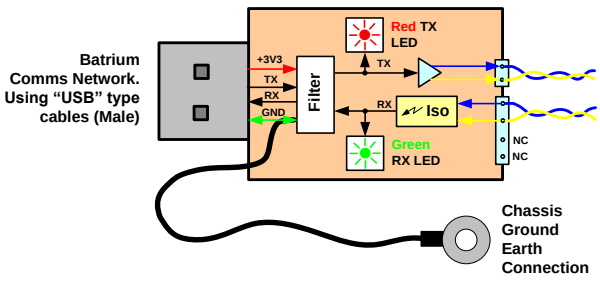
IsoMon has complementary 2 and 4 pin connectors for direct connection to the beginning and end of a BlockMon or LongMon network. The signals have output and input filtering.

IsoMon uses a common "USB" type male connector that mates directly with a PacMon or SiMon. It is normal to add up to 5 metres of common USB male to female extension cable in-line.

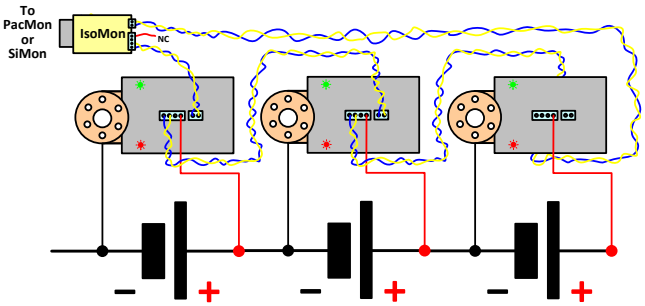
It is powered off the connecting "USB" pins (PacMon/SiMon). It consumes only a few mA, mainly to drive the diagnostic LEDs.

The red and green LEDs provide transmit and receive data diagnostics.

IsoMons are encapsulated in a tough transparent coating installed in-line with the '"USB" cable. For even more robust (or high voltage) requirements clear heat-shrink can be added over the connector and the device.




**IsoMon Block Diagram**




**IsoMon Connection Diagram**

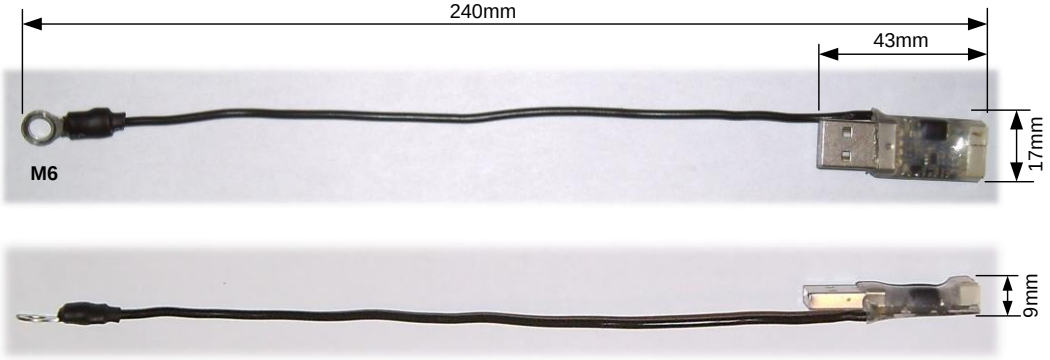
## Absolute Maximum Conditions

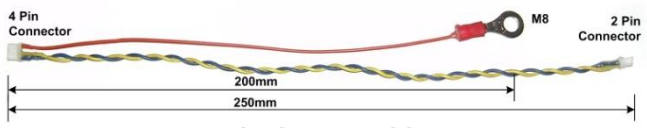
Note: exceeding these limits will damage the IsoMon electronics and may be hazardous.

| Parameter | Min | Max | Unit | Notes |
|---|---|---|---|---|
| Isolation voltage at daisy chain RX input (2-pin input connector) | | +/- 1000 | V | Note: extreme care must be taken at high voltages. Systems typically are less than 150V and as always it is recommended that multiple fault level protection measures be taken (double insulation, creepage and clearance requirements, moisture protection etc…) |
| "USB" input voltage | | 5.5V | V | No harm to IsoMon if the "USB" type connector is inadvertently connected to a standard USB port (only +5V). |

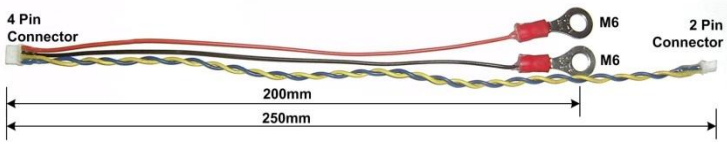
## Detailed Specifications

| Parameter | Min | Typical | Max | Unit | Notes |
|---|---|---|---|---|---|
| Normal voltage range | 3.3 | 3.3 | 5.0 | V | All devices on the Batrium network have 3.3V cable connections. |
| Power supply current | | 2 | 4 | mA | Average current consumed on the Batrium network. |
| "USB" extension cable length | 0 | | 5 | m | Male to female "USB" type cable length. See notes on USB extension cables. |



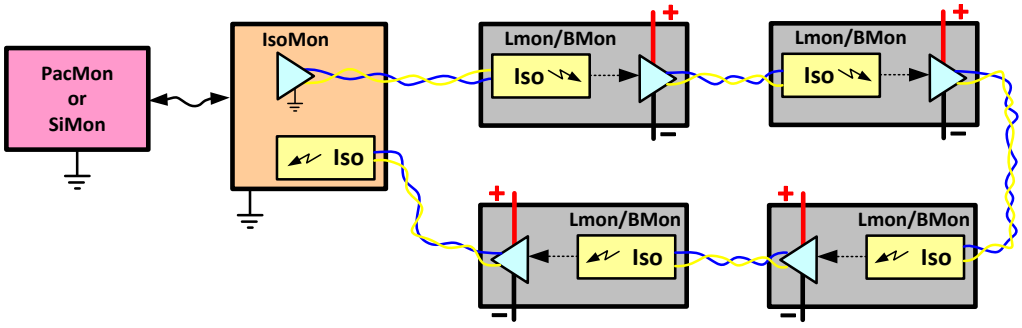

**BlockMon Cable**




**LongMon Cable**

### Input Opto-Isolation

IsoMon has high voltage opto-isolation on the input 2-pin connector. This is the same form of isolation that is on every BlockMon and LongMon input 2-pin connector. The output 4-pin connectors are not isolated. The installer should always take care when handling all cables as even the quickest short circuit can cause large fault currents that may damage the electronics.

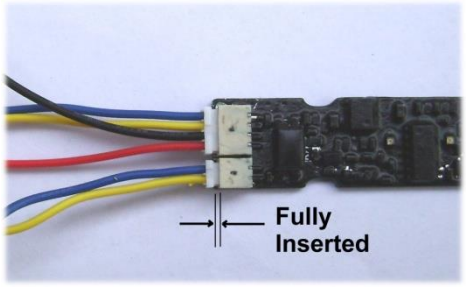


## Ground Connection

IsoMons include a chassis ground “ring” terminal that should be secured to a 0V reference M6 bolt to reduce noise and add fault protection. It is common to find significant transients in high current and high voltage systems. For safety, do not operate the system without first securing this ground cable. Do not extend this black cable unless absolutely necessary. It is important that any extension cable be able to withstand fault currents. Also be aware that extending this cable will reduce the electrical noise immunity of your system.

## Connector Mating Instructions

The small 2-pin and 4-pin connector are well suited for the BlockMon, LongMon, and IsoMon application. Care should be taken to not apply excessive diagonal forces to the connector while inserting or removing. Avoid pulling on the cables. The connector is fully mated with approximately 1mm of clearance between the cable connector outer rib and the end of the PCB connector as shown in the photo.




## USB Type Extension Cables

The individual devices in the Batrium system are interconnected using common “USB” male to female extension cables. The use of an extension cable is recommended.

When choosing a USB cable:

- Use shielded cables that are compatible with USB type 2.0 or 3.0 rating.
- Use passive type “A” extension cables.
- Do not use active extension cables with electronics included – usually identified with a large female connector housing the electronics.
- Use cables with outer plastic shielding on the female end. If not, at least add heat shrink to minimise external metal exposure.

## Diagnostic LEDs

IsoMon provides a convenient **red LED** and **green LED** for diagnostics and status indication.

| IsoMon LED | Function |
|---|---|
| Red LED | Transmit data out to the CellMon battery network (from PacMon/SiMon). |
| Green LED | Receive data from the CellMon battery network (to PacMon/SiMon). |

Messages arrive at IsoMon from PacMon (or SiMon) and are shown as a red LED flash. Messages flow around the battery network and arrive back at IsoMon. They are then shown as a green LED flash at IsoMon. These messages arrive at 40ms intervals when +12V is applied. They are also sent from the PC in configuration mode (+12V OFF).