Logging Computer Module User Manual

(PN: 532000)
220001-EN

Contents

1. Introduction

1.1. Product Summary

Logging Computer Module (later LCM) sends out user specified HTTP POST requests to collect data from ethernet based sensors or devices within the network. To get ordinary analog and digital sensors connected to ethernet, Sensor Bridge (PN: 532003, 532006, 532007) can be used.

LCM keeps record of sensors available, provides an interface to view collected data as graphs and export measured data in csv-format.

LCM can be connected to any standard network router and will be accessible as configured in the router, either within the local area network, or over the internet by port forwarding or VPN.

Rugged and simple design is tested for performance in elevated temperatures, ESD, overvoltage and mechanical shocks.

1.2. Support

Contact sales@kalliodesigns.com for any question about installation, integration, technical specification, etc. and your query will be forwarded to the correct party.

Please let us know if you need the device to comply to a certain communication protocol or have any other requirements for operation. For customized products (hardware or firmware) we need an order for several units, depending on the type of customization.

2. Getting Started

Connect an 15-26 V, 15 W DC power supply to pins 1 and 2 as described in pinout.

Connect the device to your network and use a web browser to access http://192.168.1.189/, which is the default IP the device is shipped with. If you are unable to use the default IP, see the troubleshooting section.

You should be able to view a sample data graph, start creating sensors and records and modify settings via the web interface.

3. Technical Specification

3.1. Mechanical

3.1.1. Mounting orientation

Mounting the device in an electrical cabinet or wall is recommended to be done so that the green power connector and ethernet connectors are facing down, to prevent dust build up in the device and ethernet connector.

3.1.2. Mounting flanges

Mounting flanges on the Sensor Bridge can be moved by loosening the set screw on the flange. Flanges can be removed by removing the back cover (with ethernet connector) and by sliding the flanges out from the grooves after loosening the set screw.

3.2. Indicator LED

The indicator LED is controlled by firmware and reflects the power status of LCM. See chapter troubleshooting for advice.
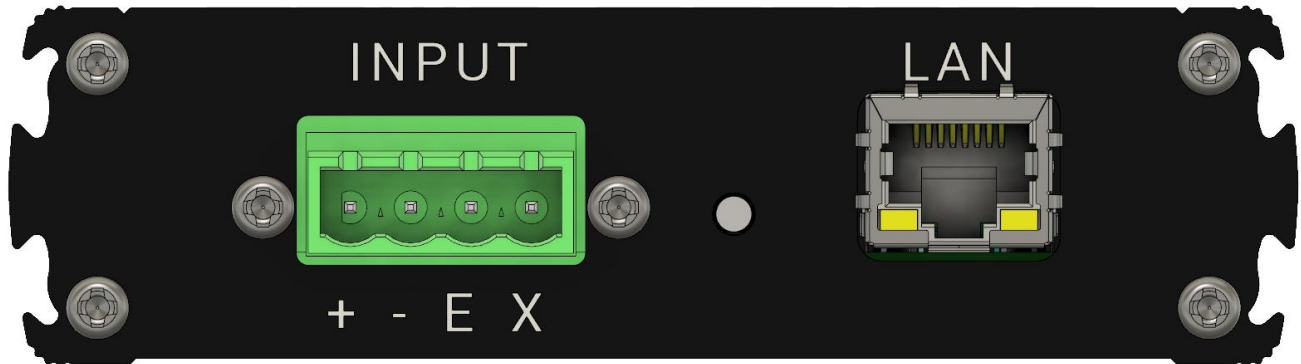
3.1. Pinout

3.1.1. Front panel

Figure 1

Pin no	Description
1	GND
2	15 – 26 V Input
3	I^{2}C SCL / Pulse input / Analog signal -
4	I^{2}C SDA / Analog signal +
LAN	Ethernet connector to connect to a local network

Table 1

3.1. Electrical Characteristics

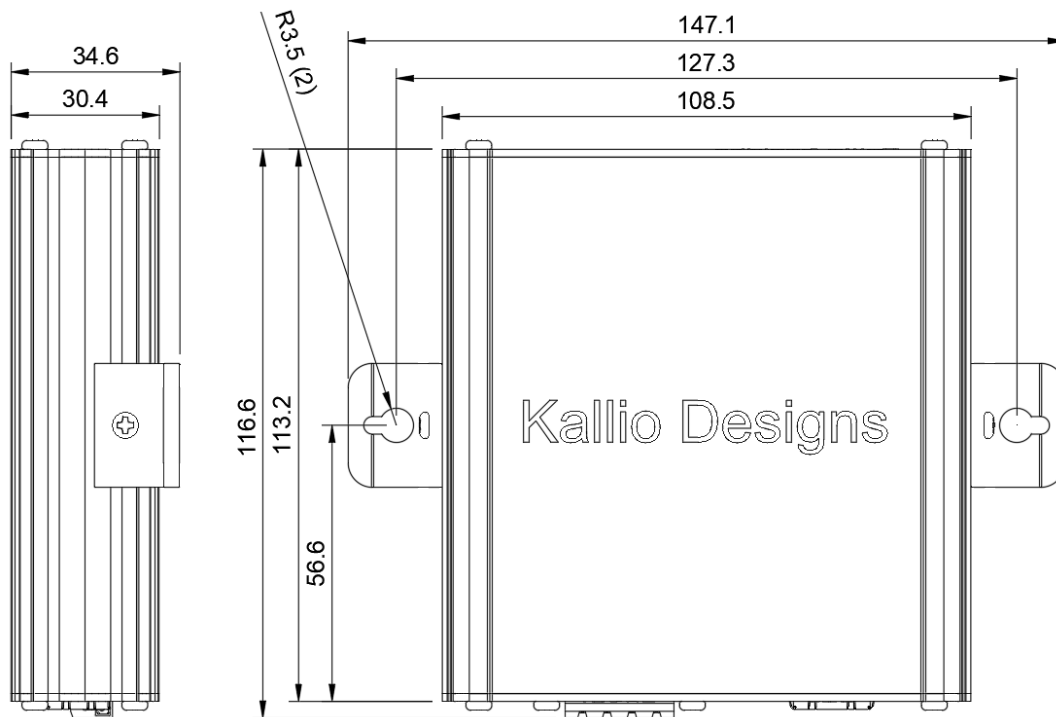| Description	Conditions	Min	Typical	Max	Unit
Power supply					
Supply voltage		8		26	V
Operating power			2.2	20	W
Idle current draw (15 V)			140		mA
Idle current draw (20 V)			105		mA
Idle current draw (24 V)			90		mA
Operating conditions					
Operating temperature	non-condensing	0		60	ºC
Communications					
Poll interval		100			ms
Poll interval accuracy		100			ms

Table 2
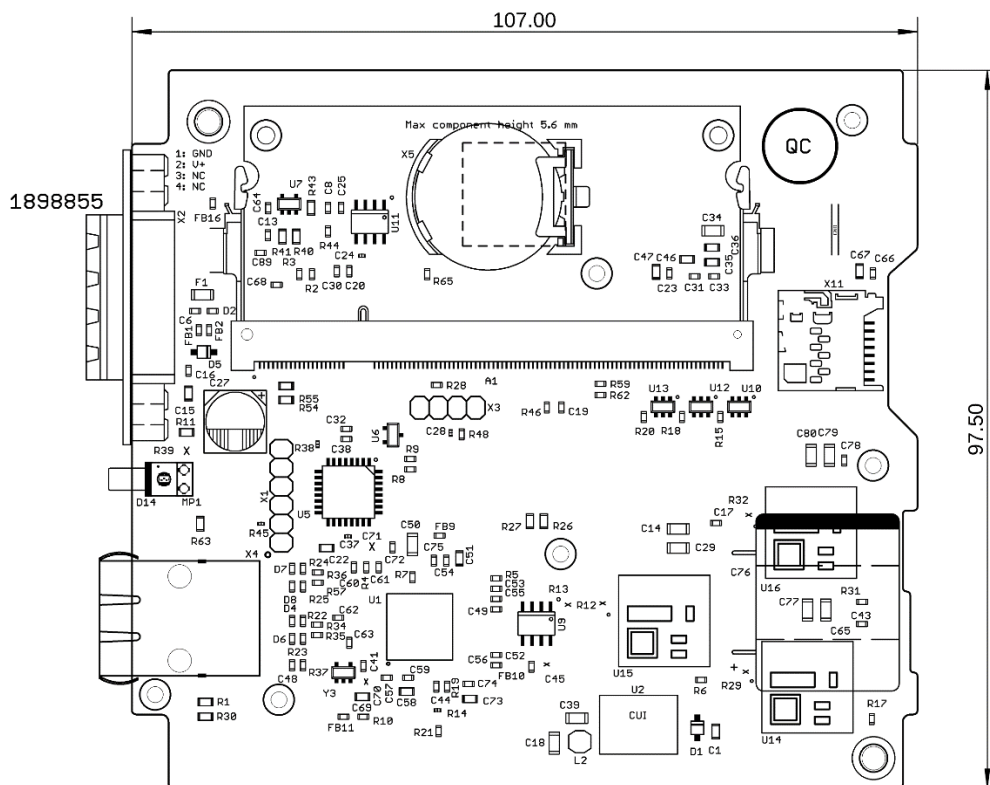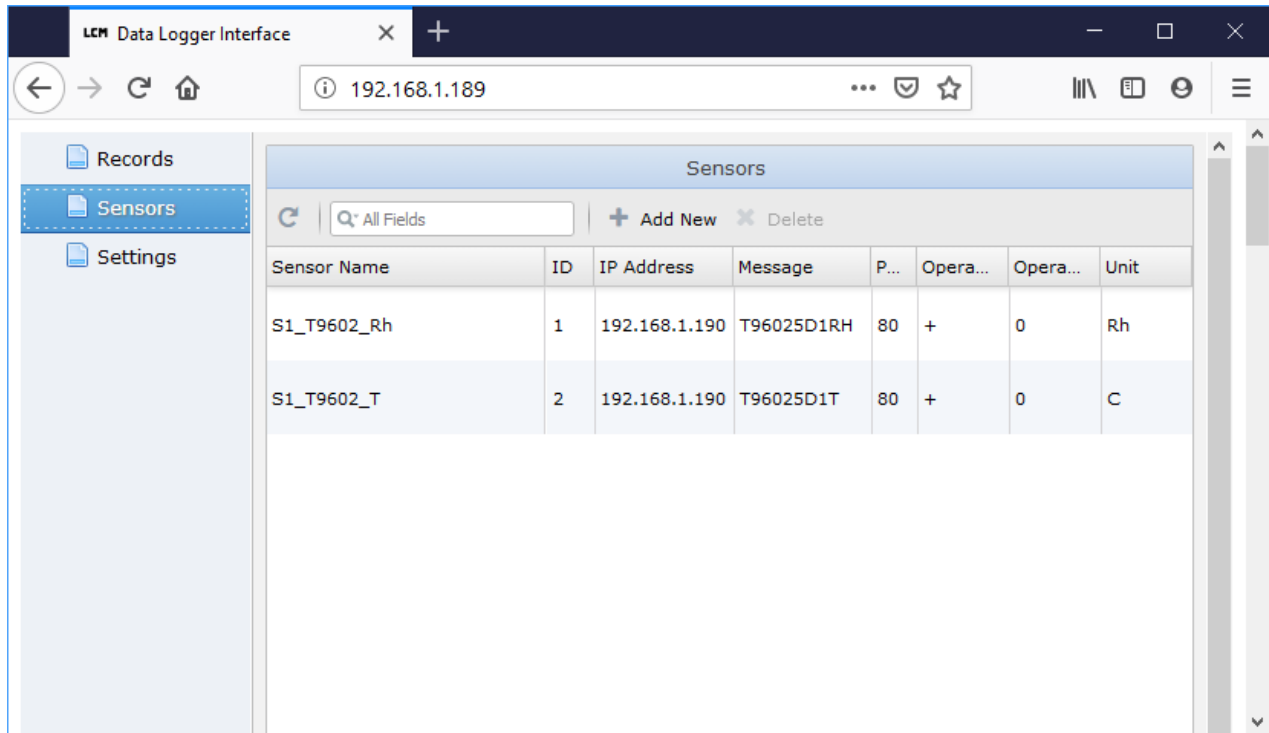
3.2. Dimensions

Figure 2

3.3. PCB dimensions

Figure 3

4. Interface

4.1. Web user interface

4.1.1. Sensors

Sensors page displays configured sensors and their settings.

Figure 4

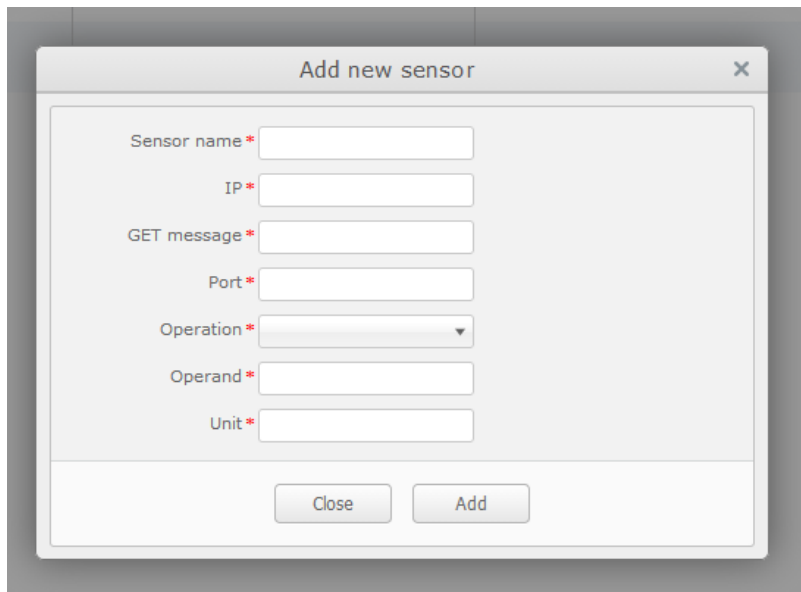Add a sensor by clicking "*Add New*", and the following dialog will be displayed:

Figure 5

1. Sensor name

   Name the sensor to make it easier to refer to it later on, such as S1_PWM_FEEDER.

2. IP

   IP that has been configured for the sensor.

3. Command

   For example "TEMPINT" if you are using Sensor Bridge. To make different measurements with one sensor, create multiple sensors and assign them to different records, as described in the next chapter.

4. Port

   Port to connect to. Default port on many devices is 80, as that is the port web browsers connect to by default. Sensor bridge operates at ports 80 and 8085.

5. Operation

   Operation and operand can be set if the sensor result has an offset or linear error that needs to be compensated or the value converted for example from amperes to milliamperes.

   Options are *Add, Substract, Divide, Multiply*. Select *Add* and set 0 as *Operand* if there is no need for the feature.

   Only one operation can be performed for the result, more complicated calculations must be done by exporting the data in CSV-format.

6. Operand

   Operand to be used in result processing.

7. Unit

   Unit of the result.

4.1.2. Records

Records view keeps a list of running and previously run measurements. Measurements can be stopped and resumed later by using the "*Start*" and "*Stop*" -buttons.
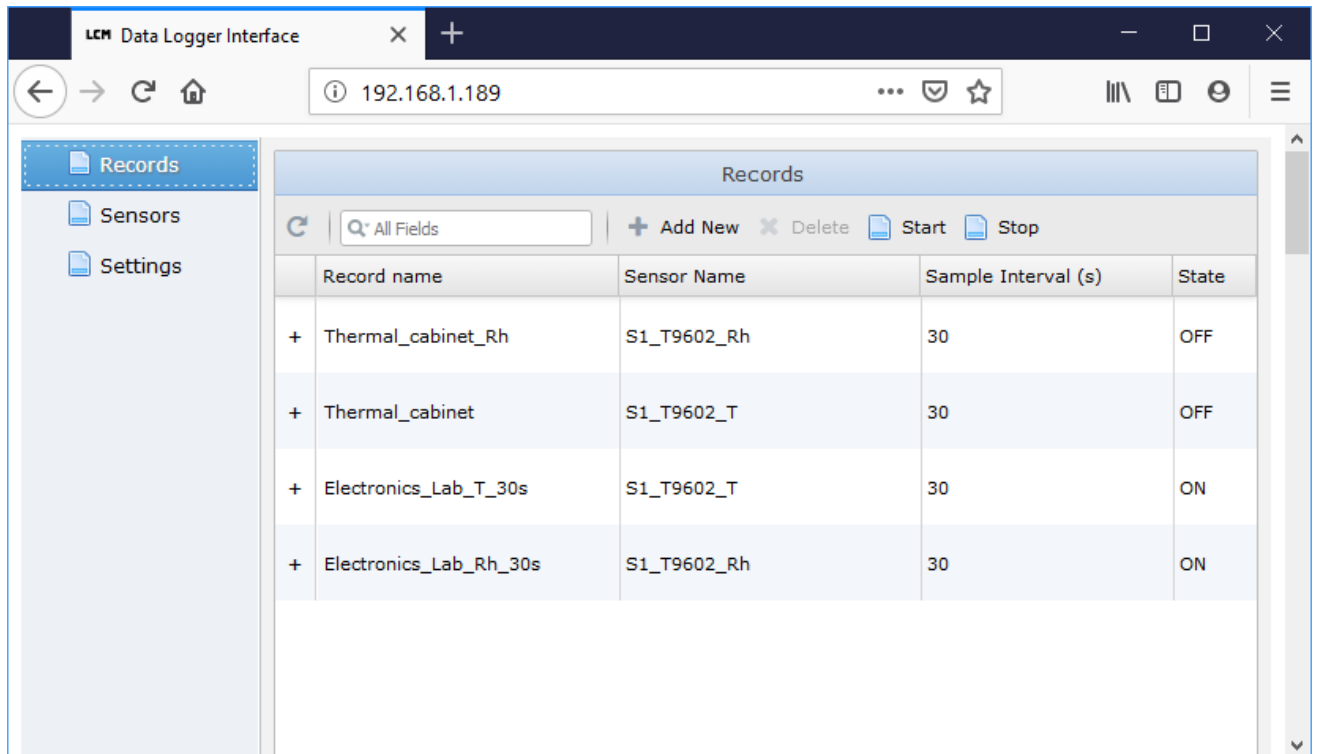

Figure 6

Data graphs can be opened by clicking the plus sign at the beginning of the listing row.
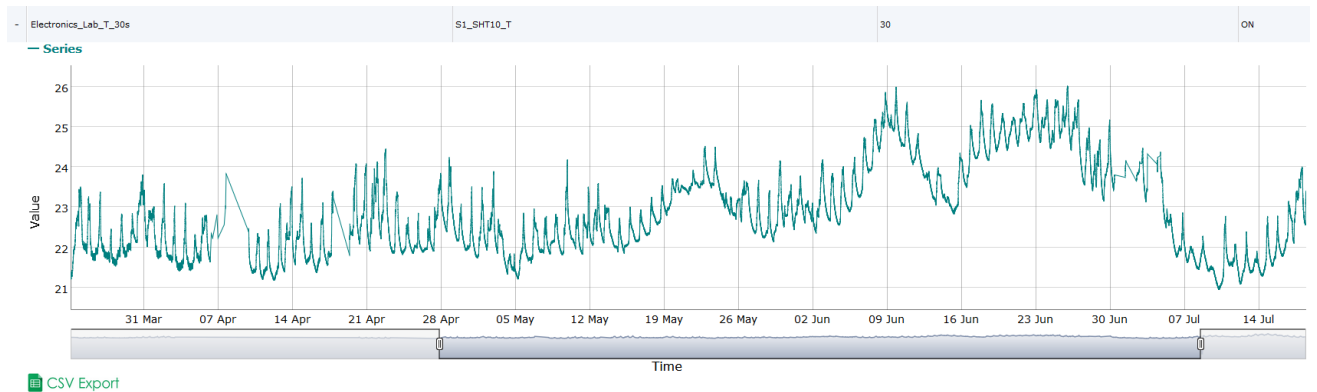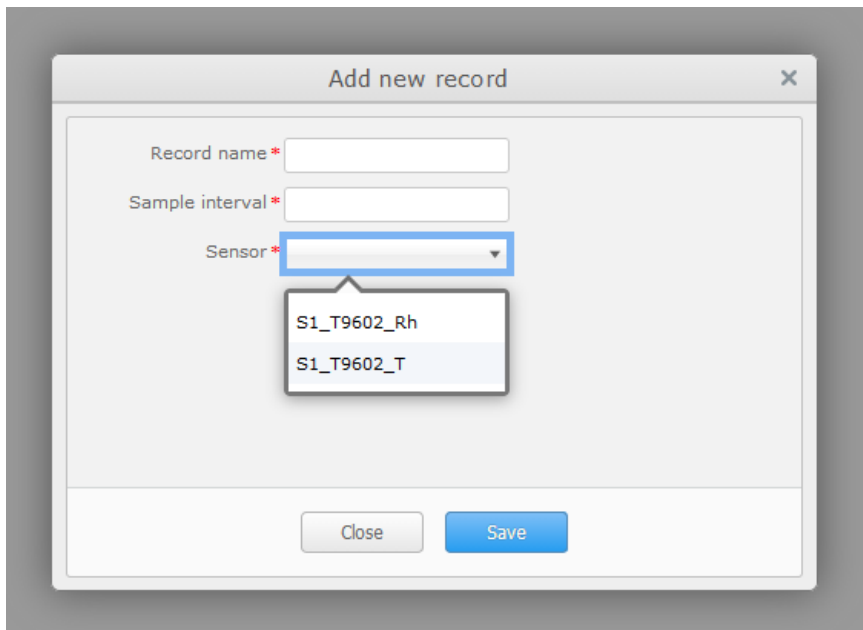

Figure 7

Graph view allows viewing a smaller section of the measurement and displays the time the value was recorded. CSV files can be exported from this view by clicking "*CSV Export*".

To start collecting data, click *"Add New Record"*.

Give the record a name, sampling interval in seconds and select the previously configured sensor to be used.

4.1.3. Settings page

IP Address

Changing the IP address requires the LCM to restart. Browse to the new IP address after a few minutes.

Gateway

Default gateway needs to be set if sensors are addressed by domain names or if NTP time server is used.

Setting time

Setting the time manually enables the internal real time clock circuit, which will keep the time even if the device is powered off. Real time clock circuit is disable if NTP time is used. For NTP time to work there needs to be a NTP server in the network and default gateway needs to be set.

Logs

Error logs can be viewed to find any problems on configuration. Browser console will also display debugging information.

4.2. Ethernet

4.2.1. Communication protocol

Standard HTTP protocol is used to transfer messages to sensors. User can specify the contents of the message as well as the port to be used. LCM only logs results requested by itself and one result per request. Posting to LCM IP without being requested will not log results.

5. Security

As there is no password protection or encryption, the LCM logs and configurations are readable by anyone within the connected network who has access to the IP of the LCM. Connecting the LCM to a LAN network won't expose it to internet, unless the router connecting LAN to internet has been configured so.

LCM runs on a Linux based operating system with a web server and firewall controlling access. User accounts and file system have been configured to be safest possible. Web server and firewall updates are disabled to prevent unexpected behaviour, so security updates can only be guaranteed until the date of shipping.

For the above reasons the user should never expose the LCM directly to the internet, but use VPN or other secure methods to connect it over the internet.

Measured data can also reveal if a person is at home, by following the temperature graphs or other critical information, so we don't recommend revealing the data over the internet or sharing it online. Kallio Designs takes no responsibility for damage caused by such acts.

6. Example usage

6.1. Usage with Sensor Bridge (PN: 532003, 532006, 532007)

To use Logging Computer Module (LCM) for collecting data from Sensor Bridges you need to connect them to the same network. To use Logging Computer Module, you need to have a PC in the network to access the web based user interface. Third party sensors can be connected in similar manner.
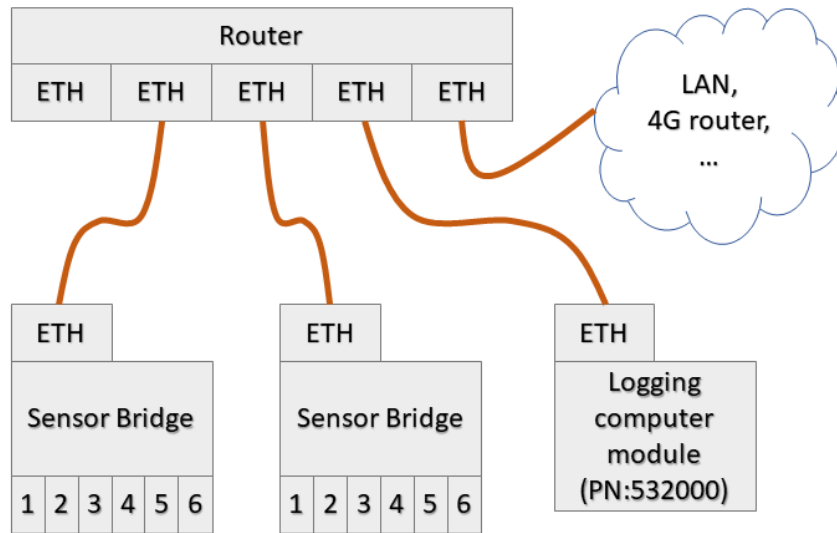
6.1.1. Connection diagram

Figure 8

7. Accessories and related products

Accessories and related products are available for purchase at http://kalliodesigns.com/.

Part number	Description
532003	Sensor Bridge Digital
532006	Sensor Bridge Voltage
532007	Sensor Bridge Current

Table 3

8. Troubleshooting

8.1. LED codes

Symptom	Reason
LED lit green, short blink every 2 s	Powered and running normally
LED blinking green once a second	Booting up
LED is not lit	No input voltage or device is powering off due to undervoltage condition.
LED is not lit, blinks green every 2 s	Input voltage too low. Device is powered off, only firmware running.

Table 4

8.2. Undervoltage

LCM will shut down safely if undervotage condition is detected. LCM can be powered off by just removing input voltage. Rebooting takes time, so cutting power for a short period of time will cause the device to reboot, but internal super capacitors will keep the firmware running and critical functions running to prevent loss of data.