

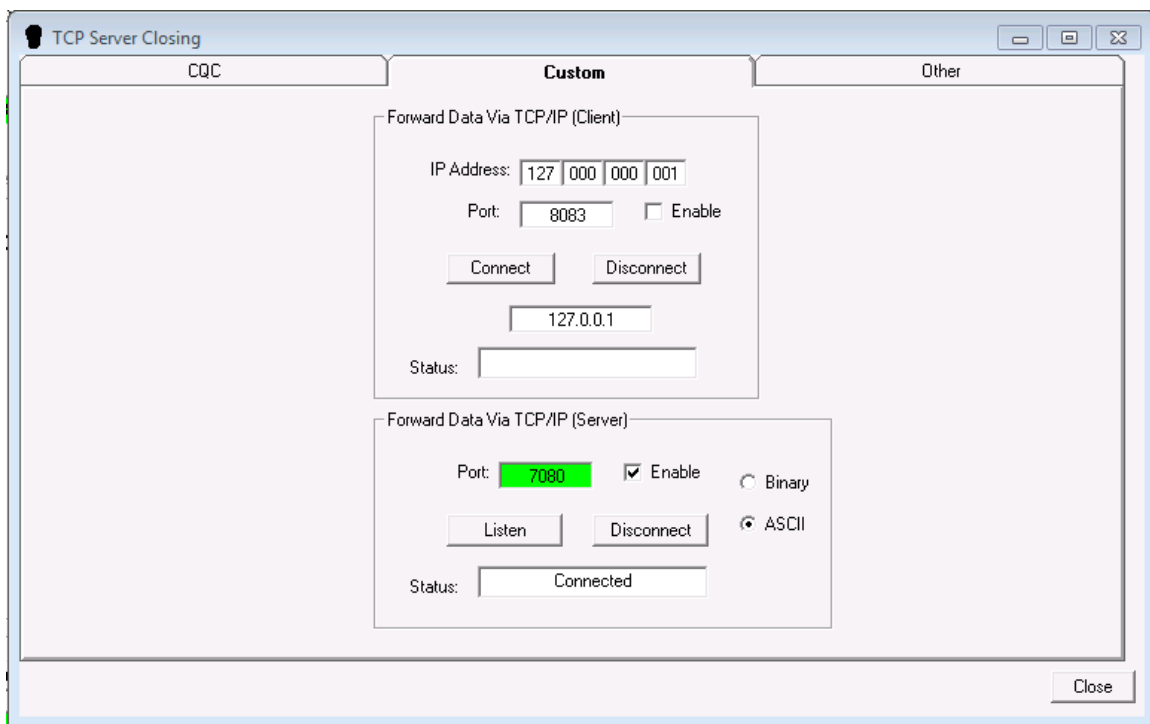
HCA Tech Note 402: Integrating HCA with Brultech Energy Monitors

With the addition of Generic IP interfaces in version 12 of HCA, it is now possible to integrate data from [Brultech Energy Monitors](#). This technical note discusses integration with the Brultech ECM-1240 monitor.

The ECM-1240 has an RS-232 serial port that can be interfaced to a serial-to-Ethernet device offered by Brultech known as the EtherPort. The EtherPort forwards data at set intervals to the Brultech Engine software running on a PC. The Engine software stores the data in a database that can be read by other Brultech-supplied software to generate graphs of electricity usage and display them as web pages.

While it is possible to get the raw data directly from the ECM-1240 via the Etherport, it is better to first send the data to the Brultech Engine software so it can be stored in the database, processed, and then forwarded to HCA.

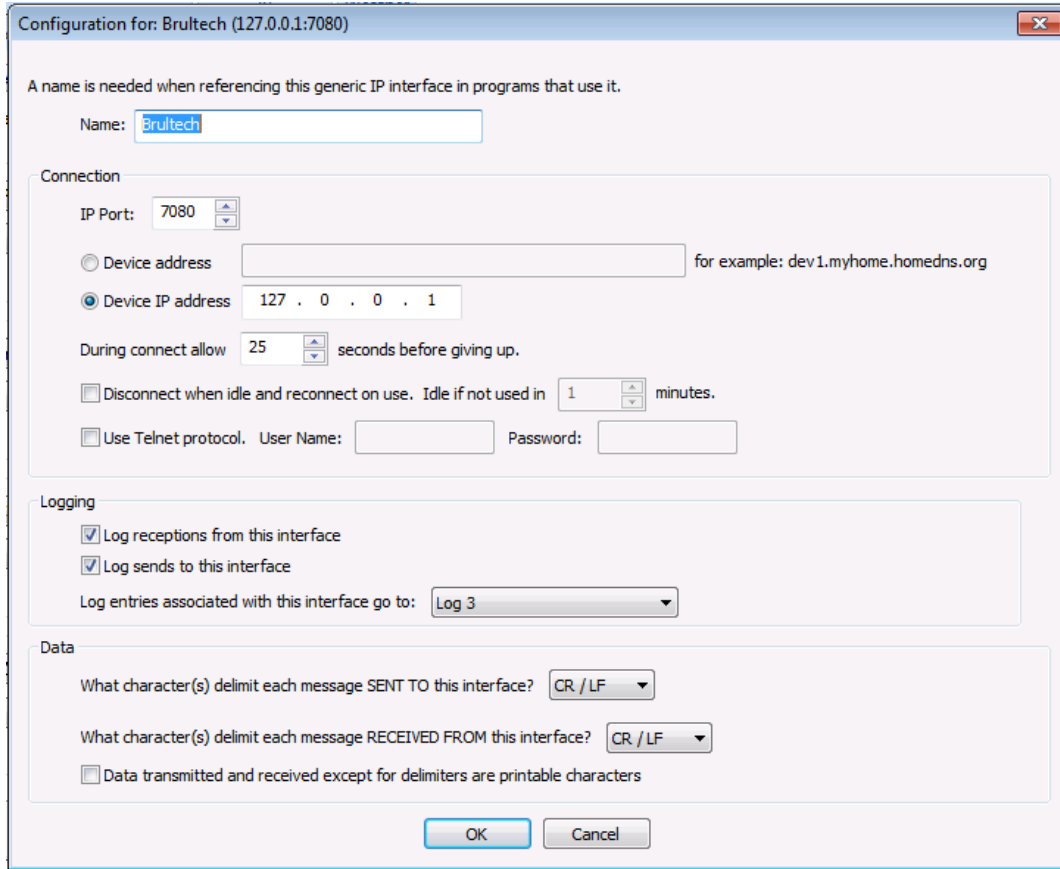
This is an example of the dialog box in the Brultech Engine software configuring it as a server of ASCII data packets to HCA:



The default port of 7080 has been chosen, and the Listen button clicked. HCA has connected to the server via a generic IP interface, so the dialog shows the status as “Connected”.

A generic IP interface in HCA is configured to receive the forwarded packets. This configuration assumes the Engine software is running on the same computer as HCA, hence the use of the

localhost IP address 127.0.0.1. If the Engine software is running on another computer, substitute its IP address.



When the Engine software is configured to forward ASCII data (as opposed to binary data), the data packet looks like this:

CH1PAa=1560&CH2PAa=0&CH1PPa=0&CH2PPa=0&CH1Aa=12.6&CH2Aa=0.1&Paux1a=0&Paux2a=26&Paux3a=97&Paux4a=729&Paux5a=183&KWhCH1a=50131.646&KWhCH2a=0.007&KWhAux1a=792.544&KWhAux2a=855.29&KWhAux3a=987.468&KWhAux4a=827.098&KWhAux5a=1103.763&Timea=22:26:30&Volta=123.8&DevSNa=205776

The EtherPort device connects up to three ECM-1240s (a, b, or c). The device identifier is the letter before each "=" character. In the example above, this identifier is "a".

The ECM-1240 has two main channels, and 5 auxiliary channels. Here is a decode of the above message.

- CH1PAa=1560 is the usage in watts of the loads on CH1, typically the main power panel
- CH2PAa=0 is the usage in watts of the loads on CH2. CH2 can be typically used for a subpanel, or for measuring the output of a solar array.

- CH1Aa=12.6 is the current flowing through CH1.
- Paux[1-5]a=0 is the power flowing through aux channel [1-5]
- KWhCH1a=50131.646k is the kilowatt-hour consumption of all loads on CH1 since the ECM-1240 was reset.
- KWhAux[1-5]a=792.544 is the kilowatt-hour consumption of all loads on Aux [1-5] since the ECM-1240 was reset.
- Timea=22:26:30 is the time of day.
- Volta=123.8 is the current line voltage
- DevSNa=205776 is the ECM-1240 serial number

The first step is to create a program to receive the data and a trigger on that program to process any reception. The ASCII string sent by the Engine software to HCA is easily parsed using the HCA_textPiece function. For example, the power consumption field of the Aux1 channel is obtained this way:

```
Watts_Aux1 = _textPiece(BrultechPacket, 7, "&");  
Start = _InStr(Watts_Aux1, "=");  
Stop = _len(Watts_Aux1);  
Watts_Aux1 = _mid(Watts_Aux1, Start+1, Stop-Start)
```

What can you do with this data? Here are some ideas.

You can have HCA keep running totals of the current and previous days' or current and previous months' power consumption, and display them on a web page. You can compare the monthly total to your utility bill.

If you have solar panels installed, you could keep track of the power they generate monthly.

With HCA's ability to track energy usage of controlled devices, you can easily determine what percentage of your total electricity usage is lighting, and estimate what kind of savings you might get if you installed more efficient lighting.

You could also take action if power usage exceeds a preset value, such as raising the thermostat's cooling setpoint, or turning off certain loads, such as lighting.

Another option is that HCA can send a text message if the line voltage drops below a certain level, indicating a brownout condition.

Once you have configured both the Brultech and HCA, anything is possible.