RPI Data Acquisition Board Sensor Equations

Board #: 3

List of Port Configuration for the PIC, there are only channel values for parts that go through the A-D Converter:

<table>
<thead>
<tr>
<th>Pin</th>
<th>Pin Destination</th>
<th>A-D Channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Tsense_out2</td>
<td>0</td>
</tr>
<tr>
<td>34</td>
<td>Vsense_out1</td>
<td>10</td>
</tr>
<tr>
<td>35</td>
<td>Vsense_out2</td>
<td>8</td>
</tr>
<tr>
<td>36</td>
<td>Isense_Vout</td>
<td>9</td>
</tr>
<tr>
<td>37</td>
<td>Tsense_out1</td>
<td>11</td>
</tr>
</tbody>
</table>

Commands for the Board:

Get Analog Value:
Destination/source/number of bytes sent/0/channel/checksum
Destination/source/number of bytes sent/Error Type/MSB/LSB/checksum

Conversion equations for the sensors:

Voltage Sensors:
Convert the Hexadecimal value from the terminal to a decimal value.
x = decimal value coming from the terminal
.0049x + .0103 = voltage before it enters the voltage divider
.5x + .5= voltage at the output

Temperature Sensors:
Convert the Hexadecimal value from the terminal to a decimal value.
x = decimal value coming from the terminal
.0247519x – 19.9367 = Degrees Celsius

Current Sensor:
Convert the hexadecimal value from the terminal to a decimal value.
X = decimal value coming from the terminal
.0396x – 19.944 = current