**PE24103 – TELEMETRY**

Please find the formula for telemetry in PE24103:-

From Linear11 value to Physical Value

Voltage:

HEX2DEC/2048

Current:

HEX2DEC -2^15 -2^14 -2^12 -2^11 = X

If X > 1023, then (X-1024)/32 – 32

Else, X/32

Temperature:

HEX2DEC -2^15 -2^14 -2^13 -2^12 = X

If X > 1023, then (X-1024)/4 – 256

Else, X/4

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This is the mapping given for PE24103:

|  |  |  |
| --- | --- | --- |
| **Name** | **Register Address** | **Register Name** |
| VIN | 0x23E | READ\_VIN |
| IIN | 0x23F | READ\_IIN |
| VX | 0x24E | ADC\_VX\_RSLT |
| VOUT1 | 0x236 | READ1\_VOUT |
| IOUT1 | 0x237 | READ1\_IOUT |
| VOUT2 | 0x238 | READ2\_VOUT |
| IOUT2 | 0x239 | READ2\_IOUT |
| VOUT3 | 0x23A | READ3\_VOUT |
| IOUT3 | 0x23B | READ3\_IOUT |
| VOUT4 | 0x23C | READ4\_VOUT |
| IOUT4 | 0x23D | READ4\_IOUT |
| TEMP | 0x240 | READ\_TEMP\_1 |

PE24103 Voltage related Telemetry readings are :

1. VIN
2. VX
3. VOUT1
4. VOUT2
5. VOUT3
6. VOUT4

So for the above readings, we have to apply the formula :

Voltage:

HEX2DEC/2048

For eg, consider VIN :

1. Read the value of mapped register which is READ\_VIN at address 0x23E.
2. The data will be in the format of hexadecimal (Eg :FF99)
3. Convert Hexadecimal to decimal (FF99 → 65433) .
4. Divide this decimal value by 2048.
5. The final value will be shown on the GUI against VIN under Telemetry readings.

Similarly for all the remaining voltage related telemetry readings.

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PE24103 Current related Telemetry readings are :

1. IIN
2. IOUT1
3. IOUT2
4. IOUT3
5. IOUT4

So for the above readings, we have to apply the formula :

Current:

HEX2DEC -2^15 -2^14 -2^12 -2^11 = X

If X > 1023, then (X-1024)/32 – 32

Else, X/32

For eg, consider IIN :

1. Read the value of mapped register which is READ\_IIN at address 0x23F.
2. The data will be in the format of hexadecimal (Eg : DF99)
3. Convert Hexadecimal to decimal (DF99 → 57241) .
4. Subtract the value of (2^15 -2^14 -2^12 -2^11) from this this decimal value . The value of (2^15 -2^14 -2^12 -2^11) is

* 2^15 - 32768
* 2^14 – 16384
* 2^12 - 4096
* 2^11 – 2048
* (-32768-16384-4096-2048) = -55296
* Therefore hex2dec – 55296 = 57241 - 55296 = **1945**

1. Check whether the above result is above 1023 or not.
2. If the result is above 1023, then do [(result – 1024)/32 -32] . ie (1945 – 1024) /32 = 28.78. Then subtract 32 from this result, which is 28.78 – 32 = **-3.21 should be shown on GUI.**
3. If the result is below 1023, result divide by 32 will be the value shown on GUI.( In this case, it is above 1023, hence ignore this step).

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PE24103 Temperature related Telemetry readings are :

1. Temp

Temperature:

HEX2DEC -2^15 -2^14 -2^13 -2^12 = X

If X > 1023, then (X-1024)/4 – 256

Else, X/4

For eg, consider Temp :

1. Read the value of mapped register which is READ\_Temp\_1 at address 0x240.
2. The data will be in the format of hexadecimal (Eg : DF99)
3. Convert Hexadecimal to decimal (DF99 → 57241) .
4. Subtract the value of (2^15 -2^14 -2^12 -2^11) from this this decimal value . The value of (2^15 -2^14 -2^12 -2^11) is

* 2^15 - 32768
* 2^14 – 16384
* 2^12 - 4096
* 2^11 – 2048
* (-32768-16384-4096-2048) = -55296
* Therefore hex2dec – 55296 = 57241 - 55296 = **1945**

1. Check whether the above result is above 1023 or not.
2. If the result is above 1023, then do [(result – 1024)/4 -256] . ie (1945 – 1024) /4 = -230.25. Then subtract 256 from this result, which is 230.25 – 256= **-25.75 should be shown on GUI.**
3. If the result is below 1023, result divide by 32 will be the value shown on GUI.( In this case, it is above 1023, hence ignore this step).

This is how the telemetry readings are shown in PE24103 i2c GUI. Similarly for PE24104 i2c as well.