**Procedure to select the Charge Current within V200t**

1. **Introduction**

This document will describe how the software can control the charger IC charging current using the fuel gauge GPOUT pin.

1. **GPOUT set-up**

This is done with the OpConfig register ( subclass ID 64). We need to configure the folowing bits;

* 1. BATLOWEN = 1 to set for BAT\_LOW function. This will allow us to set-up the SOC1 thresholds, which we will use to control the GPOUT value along with the polarity setting.
  2. GPIOPOL = 1, this will set the charge current to high rate option.
  3. SOC1 Set Threshold = 93%.
  4. SOC1 Clear Threshold = 95%.

1. **How it all works**

Under normal operating conditions, with this configuration, the charge current setting will allow for high rate current (1.2A) battery charging when we need it most (SOC < 93%). When we want to print, the software should set the GPIOPOL = 0, this will reduce the maximum charge current to the Low Rate setting. The chart shows how the GPIOPOL bit can be used.

* Low rate (0.20A) current setting = Red.
* High rate (1.2A) current setting = Green.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Non Print Mode** | | | | **Print Mode** | | | |
| SOC | SOC1 Flag | GPIOPOL | GPOUT | Rate | Estimate | GPIOPOL | GPOUT | Rate | Estimate |
| 100% | 0 | 1 | 0 | Low | 0.00A | 0 | 1 | High | 0.00A |
| > 95% | 0 | 1 | 0 | Low | 0.03A | 0 | 1 | High | 0.03A |
| < 93% | 1 | 1 | 1 | High | 0.06A | 0 | 0 | Low | 0.02A |
| 80% | 1 | 1 | 1 | High | 0.60A | 0 | 0 | Low | 0.10A |
| 70% | 1 | 1 | 1 | High | 0.96A | 0 | 0 | Low | 0.16A |
| 50% | 1 | 1 | 1 | High | 1.20A | 0 | 0 | Low | 0.20A |
| 0% | 1 | 1 | 1 | High | 1.20A | 0 | 0 | Low | 0.20A |

1. **Operation**

Whenever the Printer is printing, the GPIOPOL needs to be set to 0 as this will force the low rate current setting, when the SOC level is below 93%.

When SOC is above 95%, the charger IC, now in the Constant Voltage Phase, will have set the actual charge current to a low level and changing the GPIOPOL bit will not force charging to a high rate level even though it is now selected.