

First OVP tests

Felix Müller
08.11.2017



- > PS 49 w/o OVP with which the module worked fine (after lab PP was attached)
- > Two PS with OVP (39 and 45)
- > Tested 45 first:
 - At the beginning standard behavior of the module
 - PS shut off after guard was ramped up
 - Reproducible
 - Not sure any more if it was due to the OVP
 - PXD:P2021:status-ovp:S:cur did not turn off (only enabled turned off)
 - Either shutdown not due to OVP or feedback not correct
 - What else can shut down the PS???

Clear on and off connection

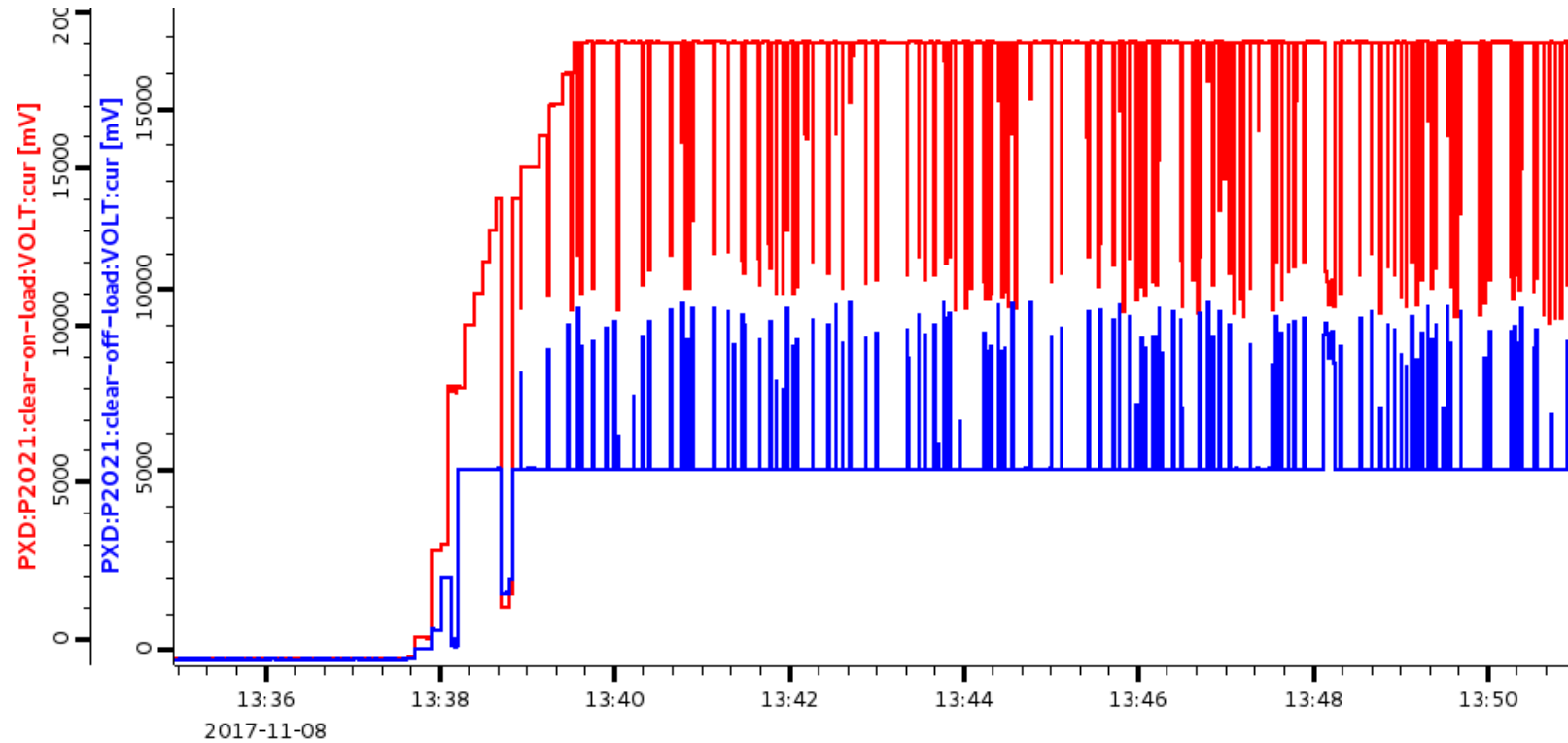
- > Suddenly connection between clear on and off visible
 - Voltage difference of 2 V maximum
 - Large currents
- > Module can be ramped up completely (except that clear on and off are not at nominal values)
 - No problem with guard any more

PXD PS Channel Overview Unit P2021										
Unit ID: 45										
	min.	Set Current	max.	min.	Set Voltage	max.	Reg.	Voltage at Regulator	Voltage at Load	Current
sw-sub	0 mA	50 mA	50 mA	-7100 mV	-7000 mV	0 mV	ENABLE	-7060 mV	-7005 mV	-26 mA
sw-dvdd	0 mA	30 mA	30 mA	0 mV	1800 mV	2000 mV	ENABLE	2605 mV	1800 mV	9 mA
sw-refin	0 mA	30 mA	30 mA	-7100 mV	-5200 mV	0 mV	ENABLE	-5202 mV	-5203 mV	0 mA
dcd-amplow	0 mA	1350 mA	1400 mA	0 mV	275 mV	500 mV	ENABLE	160 mV	276 mV	-1149 mA
dcd-avdd	0 mA	3000 mA	3000 mA	0 mV	1800 mV	2000 mV	ENABLE	4351 mV	1800 mV	2525 mA
dcd-dvdd	0 mA	940 mA	1000 mA	0 mV	1800 mV	2000 mV	ENABLE	3155 mV	1801 mV	708 mA
dcd-refin	0 mA	1000 mA	1000 mA	0 mV	725 mV	1300 mV	ENABLE	2040 mV	726 mV	217 mA
dhp-core	0 mA	730 mA	800 mA	0 mV	1200 mV	1640 mV	ENABLE	2448 mV	1201 mV	431 mA
dhp-io	0 mA	550 mA	550 mA	0 mV	1800 mV	2000 mV	ENABLE	2940 mV	1802 mV	209 mA
bulk	0 mA	10 mA	10 mA	0 mV	10000 mV	10000 mV	ENABLE	10000 mV	10002 mV	0 mA
clear-on	0 mA	30 mA	70 mA	0 mV	19000 mV	22000 mV	EMERGENCY	7652 mV	7517 mV	29 mA
clear-off	0 mA	30 mA	40 mA	0 mV	5000 mV	20000 mV	EMERGENCY	4979 mV	4996 mV	-5 mA
gate-on1	0 mA	15 mA	30 mA	-4000 mV	5000 mV	5000 mV	ENABLE	5012 mV	4998 mV	0 mA
gate-on2	0 mA	15 mA	30 mA	-4000 mV	5000 mV	5000 mV	ENABLE	5010 mV	5002 mV	0 mA
gate-on3	0 mA	15 mA	30 mA	-4000 mV	5000 mV	5000 mV	ENABLE	5018 mV	4998 mV	0 mA
gate-off	0 mA	30 mA	30 mA	0 mV	5000 mV	6000 mV	ENABLE	5027 mV	5002 mV	4 mA
source	0 mA	120 mA	150 mA	0 mV	6000 mV	7000 mV	ENABLE	6865 mV	5998 mV	5 mA
ccg1	0 mA	10 mA	10 mA	-5000 mV	0 mV	0 mV	ENABLE	1 mV	0 mV	0 mA
ccg2	0 mA	10 mA	10 mA	-5000 mV	0 mV	0 mV	ENABLE	1 mV	-4 mV	0 mA
ccg3	0 mA	10 mA	10 mA	-5000 mV	0 mV	0 mV	ENABLE	0 mV	5 mV	0 mA
hv	0 uA	200 uA	10000 uA	-80000 mV	-70000 mV	0 mV	ENABLE	-69938 mV	-69937 mV	-99 uA
drift	0 mA	10 mA	10 mA	-6000 mV	-5000 mV	0 mV	ENABLE	-5001 mV	-5003 mV	0 mA
polycover	0 mA	0 mA	10 mA	0 mV	0 mV	0 mV	ENABLE	2 mV	10 mV	0 mA
guard	0 mA	10 mA	30 mA	-6000 mV	-5000 mV	0 mV	ENABLE	-4999 mV	-5003 mV	0 mA

- > Switched back to PS45 (w/o OVP)
 - Same behavior
- > Switched to second OVP PS 39
 - OVP triggers when clear on is ramped up
 - Roughly at 8 V
 - If clear off is ramped up simultaneously, higher voltages can be achieved
 - maximal software current of 70 mA not reached before OVP triggers
 - Short spikes?

BUT

- > Module working better again...
- > PS 45 shuts down again when guard is ramped without OVP status led turning red



Conclusion

- > Not very conclusive results
- > Worrisome that both PS with OVP response differently to the system
 - PS 45 cannot ramp up guard
 - PS 39 cannot ramp up clear on/off
- > I will try to read out the internal memory of the PS which channel triggered
- > But module seems to have a defect: difficult for testing
 - Switcher problem?