

Power Consumption of One Motherboard

EKLM Power

Measured from one MB (S/N: KLMS_01)

1 Motherboard

10 ASICs

14 Motherboards

10 ASICs Each

Before Programming

Raw	Set (V)	Fluke (V)	Current (A)	Power (W)	Current (A)	Power (W)
-5.0 V	5.002	4.796	4.036	20.188	56.504	282.633
5.0 V	5.000	5.011	0.039	0.195	0.546	2.730
3.3 V	3.300	3.207	2.472	8.158	34.608	114.206

After Accounting for Cable Drop

Raw	Set (V)	Fluke (V)	Current (A)	Power (W)	Current (A)	Power (W)
-5.0 V	5.193	4.999	3.850	19.993	53.900	279.903
5.0 V	5.000	5.010	0.039	0.195	0.546	2.730
3.3 V	3.394	3.285	2.472	8.390	34.608	117.460

After Programming

Raw	Set (V)	Fluke (V)	Current (A)	Power (W)	Current (A)	Power (W)
-5.0 V	5.193	5.020	3.836	19.920	53.704	278.885
5.0 V	5.000	5.003	0.040	0.200	0.560	2.800
3.3 V	3.394	3.219	3.354	11.383	46.956	159.369

After Setting TargetX Configuration

Raw	Set (V)	Fluke (V)	Current (A)	Power (W)	Current (A)	Power (W)
-5.0 V	5.193	5.039	3.806	19.765	53.284	276.704
5.0 V	5.000	4.990	0.040	0.200	0.560	2.800
3.3 V	3.394	3.128	4.855	16.477	67.966	230.676

After Turning on HV

Raw	Set (V)	Fluke (V)	Current (A)	Power (W)	Current (A)	Power (W)
-5.0 V	5.194	5.039	3.814	19.810	53.396	277.339
5.0 V	5.000	4.990	0.030	0.150	0.420	2.100
3.3 V	3.395	3.126	4.875	16.551	68.250	231.709

Situation at KEK:

Each Schroff 9U VME Crate has 2 modular power supplies by Cosel
8 crates total for EKLM system

ACE900F	P/N: AC9-2C2B2B-02	(Values on sticker)	(Calculated)
Input:	AC 100-240V 50-60Hz 12A Max	5V : 60A	300 W
Output:	800/900W	3.3V : 108A	356.4 W

ACE650F	P/N: AC6-Q2C2B-00	(Values on sticker)	(Calculated)
Input:	AC 100-240V 50-60Hz 8.4A Max	+/-12V : 6.4A / 6.4A	76.8W / 76.8W
Output:	600/650W	5V : 60A	300 W
		3.3V : 60A	198 W

*ACE650F used for -3.3V and -5V in Schroff VME crate.

Power Budget

Raw	Budget (W)	Total Needed (W)	Remainder (W)
-5.0 V	300	282.6	17.4
5.0 V	300	2.8	297.2
3.3 V	356.4	231.7	124.7

- May be tripping -5V supply during turn on
- Could possibly remedy by installing auxiliary -5V supply in each Schroff 9U VME crate



Wilkinson Ramp Measurements

- Measured Wilkinson ramp on 10 TargetX daughter cards



DC #	1-2 V Ramp Time (us)	Wilkinson Clock Period (ns)	mV/ADC count
1	9.14	15.72	0.860
2	10.46	15.74	0.752
3	8.12	15.74	0.969
4	10.18	15.7	0.771
5	10.18	15.76	0.774
6	10.2	15.74	0.772
7	9.58	15.76	0.823
8	10.4	15.74	0.757
9	9.06	15.76	0.870
10	9.26	15.72	0.849



Mean:	9.66	15.74	0.820
Std. Dev. Of Mean:	0.25	0.01	0.023

