

BLISS/ BASS Spectrograph Specifications and Resource Estimates: 8 April 2008

SPECIFICATIONS							unit	BLISS			BASS		
Number of bands							#	5			2		
Number of spectrometers per ba							#	2			1		
Number spectrometers total							#	10			2		
Resolving Power							$\lambda/d\lambda$	700			300		
N detectors total							#	4224			320		
Detector type								TES bolometer			NTD-Ge sensed bolometer		
Detector NEP							W/sqrt(Hz)	4e-20 (goal), 8e-20 (rqmt)			2.5e-19 (goal), 5e-19 (rqmt)		
Readout Scheme								SQUID time-domain MUX			JFETS + warm lockin		
MASS													
Cold Mass (with margin)							kg	64			38		
Spectrometer + Detectors								18			4.5		
Shields / Supports								12			5		
50 mK ADR fridge + Cu straps								12.4			14.1		
Chopper, relay optics, beamsplitters								5			3		
JFETS / cold wiring								1.5			3		
Margin							30%	14.7			8.9		
Warm Mass (with margin)								57			23		
Readout Electronics								36			12		
Chopper / ADR power / HK								7.7			5.7		
Margin							30%	13.11			5.31		
Total Inst Mass (no margin)								93			47		
Total Inst Mass (w/ margin)								120			61		
Harness Mass (w/ margin)								31			12		
Hot finger (for BASS)											1.5		
Harness								24			8		
Margin							30%	7.2			2.85		
HEAT LIFT (includes 50% margin)								(see also Warren Holmes' information)					
Heat Lift required at 1.7 K								Parasitic	Active	Total	Parasitic	Active	Total
Average							mW	1.4	0.4	1.7	0.9	0.2	1.1
Peak							mW	1.4	0.6	1.9	0.9	2.3	3.2
Lift required at 4.5 K (inc choppe							mW	0.5	0.1	0.5	0.3	0.1	0.3
Lift req. at telescope shell (~20K							mW	2.1		2.1	0.7		0.7
Lift req. at shield 1 (~40 K)							mW	0.7		0.7	0.2		0.2
Lift required at shield 2 (~60 K)							mW	2.4		2.4	0.8		0.8
Ave Lift req. at shield 3 (~85K)							mW			641			204
Peak Lift req. at shield 3 (~85K)							mW			1337			1692
(85 K load could be factor of 2 smaller by using higher-temp intercepts)													
BASS JFET dissipation to 40-85 k							mW	N / A			add'l 68 mW load @ TBD		
ELECTRICAL POWER								Average	Peak	Average	Peak		
Standby / Safe mode							W	16	16	16	16		
Active total (w/ margin)							W	175	192	76	99		
Power System							W	27	29	14	17		
Chopper Drive							W	0.1	1	0.1	1		
ADR Drive							W	10	20	7	20		
Housekeeping / Control							W	8	8	8	8		
Readout Electronics							W	90	90	30	30		
Margin							30%	40	44	18	23		
VOLUME / POSITION													
pickoff mirror size							cm	~ 5.5 x 3.1			~ 5.5 x 3.1		
pickoff distance from boresight							cm	up to 10 cm			up to 10 cm		
instrument distance from boresig							cm	up to 80 cm			up to 80 cm		
inst dims (l,w,h) [cm] and vol [cm^3]								50 x 35 x 40 =	100000	30 x 30 x 30 =	27000		