

e-CALLISTO

Frequency agile radio spectrometer

Specification (a chapter of the Operating Manual)

Document Distribution:

Name	Place to find
Monsatein	M:\Webseiten\e-Callisto\Hardware
Everybody	http://www.e-callisto.org/Hardware/eCallistoSpecification.pdf

Reviews/Updates:

Author	Date	Issue	Comment
Chr. Monstein	23.10.2006	1.00	Op-Manual V1.00
Chr. Monstein	03.11.2006	1.01	Command list updated, I/O included
Chr. Monstein	07.11.2006	1.02	Minor updates
Chr. Monstein	08.04.2008	1.03	Minor updates in keywords of FIT-file
Chr. Monstein	16.04.2009	1.04	Specification only → CRAF
Chr. Monstein	16.07.2014	1.05	Link update

Parameter	Range	Unit
Frequency range	45.0 – 870.0 (in 3 separate rf-band, see tuner spec.)	MHz
Frequency resolution	62.5	KHz
Observation bandwidth	300	KHz @ -3dB
Antenna input impedance	~50	Ω
Dynamic range	-120 ... -10 2)	dBm
SFDR	> 40	dB
Detector sensitivity	25.4 ± 1	mV / dB
Noise figure max	10	dB
ALLAN time @ To	100	Sec min
Warm up time	10	Minutes
Sampling time internal clock	≤ 800 1)	Samples/sec
Sampling time external clock	≤ 1000 1)	Samples/sec
Max. Gradient dF/dT	~30.0	MHz/msec
Number of channels	4, 5 ,8 ,10, 16, 20, 25, 32, 40, 50, 80, 100, 160, 200, 400	entries
Timing uncertainty	≤ 0.3	sec
Voltage power supply	12.0 ± 2.0	Volt
Current power supply	$\sim 225 \pm 20$	mA
COM-parameters	115200N81 (no handshake)	Baudrate
Input configuration file	callisto.cfg	ASCII
Input scheduler file	scheduler.cfg	ASCII
Input frequency program	frq99999.cfg	ASCII
Output data file	XXXX_yyyymmdd_hhmmss_ff.fit 3)	FITS
Output log file	LOGyyyymmddhhmmss.TXT	ASCII
Output overview file	OV_XXXX_yyyymmddhhmmss.PRN	ASCII
Output light curve file	LCyyyymmdd_ADU_XXXX*.txt	ASCII
Weight (without cables)	800	grams
Dimensions	W=110, H=82, D= 200	mm

Remarks:

- 1) Higher measuring speeds are possible, if one accepts a reduction in SNR. There is some additional loss of channels at the low end of the sweep due to finite speed of VCO in the internal synthesizer. One has to expect a loss in channels of about 1% of number of pixels per sweep. E.g. for a sweep rate of 800 pixels/sec we expect a loss of up to 8 channels.
- 2) Sensitivity depends on control voltage of AGC input, see sensitivity plot
- 3) XXXX stands for station name like BLEN, OOTY, GAURI, SSRT, KASI etc.