



EISCAT

EISCAT DATA FORMAT

www.eiscat.se

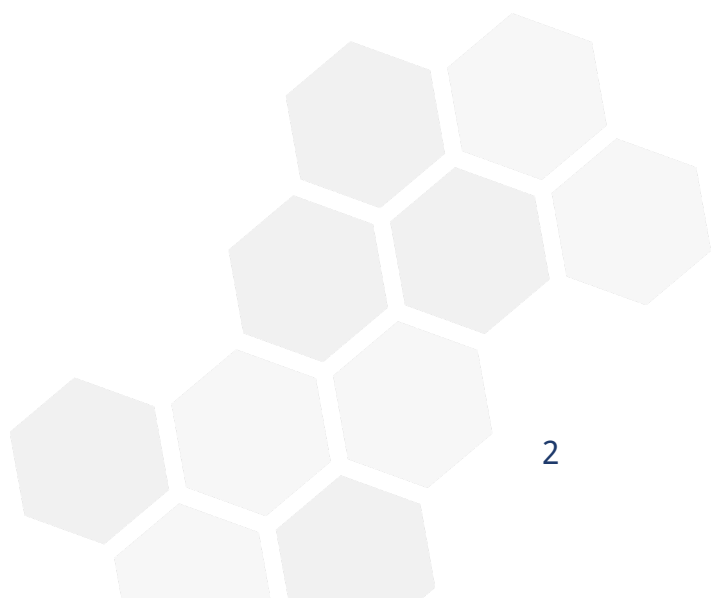
Copyright © EISCAT AB

Address: EISCAT AB
Bengt Hultqvists väg 1
SE-981 92 Kiruna
Sweden

Phone: +46 980 791 50

E-mail: contact.us@eiscat.se

1. Parameter block layout (d_parbl).....	3
2. d_parbl.....	5



EISCAT data format

Data is recorded in the matlab4 data format and consists of several blocks:

- the experiment info, **d_ExpInfo** (ASCII string)
- the antenna parameters (see below), **d_parbl** (32 bit reals) as described in the following
- the data, **d_data** (2×32 bit complex reals)
- the raw samples (not always present), **d_raw** (216 bit complex integers)

1. Parameter block layout (d_parbl)

Table follows below. Comments:

- Some parameters are relevant only for one system e.g.13-20, 23-30 ESR transmitter
- Parameters 65 and up are different depending on system
- Antenna ID parameter 41:
 - 1 32m ESR
 - 2 42m ESR
 - 3 VHF
 - 4 UHF
 - 5 Kiruna
 - 6 Sodankylä
 - 8 32p ESR
- ESR parameter 67
 - 0 SPEAR all tx off
 - 1 SPEAR low power radar
 - 2 SPEAR high power radar
 - 3 SPEAR heating
- ESR parameter 68
 - 0 Lower plasma line LO1 set to 492 MHz and upper plasma line LO1 to 502 MHz
 - 1 Lower plasma line LO1 set to 496 MHz and upper plasma line LO1 to 502 MHz
 - 2 Lower plasma line LO1 set to 492 MHz and upper plasma line LO1 to 506 MHz

- 3 Lower plasma line LO1 set to 496 MHz and upper plasma line LO1 to 506 MHz
- UHF parameter 67 and VHF parameter 72 give the power status of the Tromsø systems as follows:
 - Bit 0 UHF RF on
 - Bit 1 UHF HV on
 - Bit 2 UHF power on
 - Bit 3 VHF RF on
 - Bit 4 VHF HV on
 - Bit 5 VHF power on
 - Bit 6 Heating RF on
 - Bit 7 Heating power on
- VHF parameter 69 is decoded like this:
 - bits 0:1 Antenna phasing
 - 0 allB
 - 2 allA
 - 3 splitbit
 - bits 2:5 IF setup Positive logic Note these values are integers
 -
 -
 - bit 2 lo1/chI 0 298 MHz 1 290 MHz
 - bit 3 lo1/chII 0 298 MHz 1 290 MHz
 - bit 4 lo2/chI 0 84 MHz 1 78 MHz
 - bit 5 lo2/chII 0 84 MHz 1 78 MHz

2. d_parbl

Entry	Value	Introduced
1	Dump end year	
2	Dump end month	
3	Dump end days	
4	Dump end hours	
5	Dump end minutes	
6	Dump end seconds	
7	Integration time, sec	
8	Combined output power, W	
9	Elevation, degrees	
10	Azimuth, degrees	
11	Dump end time, secs since 1970	
12	Dump sequence number	
13	ESR % power tx1 klystron a (of 62.5 kW)	
14	ESR % power tx1 klystron b	
15	ESR % power tx2 klystron a	
16	ESR % power tx2 klystron b	

17	ESR % power tx3 klystron a	
18	ESR % power tx3 klystron b	
19	ESR % power tx4 klystron a	
20	ESR % power tx4 klystron b	
21	Noise injection calibration, K	
22	Pre-integration factor	
23	ESR % power tx5 klystron a	
24	ESR % power tx5 klystron b	
25	ESR % power tx6 klystron a	
26	ESR % power tx6 klystron b	
27	ESR % power tx7 klystron a	
28	ESR % power tx7 klystron b	
29	ESR % power tx8 klystron a	
30	ESR % power tx8 klystron b	
31	rx frequency, channel 1 (MHz)	1999-08-19
32	rx frequency, channel 2 (MHz)	1999-08-19
33	rx frequency, channel 3 (MHz)	1999-08-19
34	rx frequency, channel 4 (MHz)	1999-08-19
35	rx frequency, channel 5 (MHz)	1999-08-19
36	rx frequency, channel 6 (MHz)	1999-08-19

37	rx frequency, channel 7 (MHz)	1999-08-19
38	rx frequency, channel 8 (MHz)	1999-08-19
39	rx frequency, channel 9 (MHz)	1999-08-19
40	d_parbl version number	1999-11-12
41	antenna / data source ID (1-8)	1999-11-12
42	Remote antenna intersection range, m	2003-02-28
43-62	User parameters	2003-07-23
63	Tromsø High voltage reading (V)	2003-09-01
64	Loop counter	2004-02-01
65	ESR Peak power read from power meter (kW)	2004-02-20
66	ESR RF duty cycle calculated from RC binary	2004-03-20
67	ESR SPEAR tx status	2007-03-22
68	ESR LO settings	2007-05-14
69	ESR CHI attenuator settings (dB)	2007-05-14
70	ESR CHII attenuator settings (dB)	2007-05-14
71	ESR Peak power in wave guide 32m antenna (kW)	2008-05-24
72	ESR Peak power in wave guide 42m antenna (kW)	2008-05-24
73	ESR Start time of RC1 seconds	2015-10-23
74	ESR Start time of RC1 microseconds	2015-10-23
75	ESR Start time of RC2 seconds	2015-10-23

76	ESR Start time of RC2 microseconds	2015-10-23
77	ESR Start time of RC3 seconds	2015-10-23
78	ESR Start time of RC3 microseconds	2015-10-23
65	UHF Peak power read from wave guide (kW)	2004-02-20
66	UHF RF duty cycle read from wave guide	2004-03-20
67	UHF Power status on Tromsø, systems	2006-11-01
65	VHF antenna elevation panel 1 (deg)	2005-05-21
66	VHF antenna elevation panel 2 (deg)	2005-05-21
67	VHF antenna elevation panel 3 (deg)	2005-05-21
68	VHF antenna elevation panel 4 (deg)	2005-05-21
69	VHF IF system setup see note 1	2005-05-21
70	VHF Peak power read from wave guide (kW)	2006-10-30
71	VHF RF duty cycle read from wave guide	2006-10-30
72	VHF Power status on Tromsø, systems	2006-11-01
73	VHF CHI attenuator settings (dB)	2008-04-21
74	VHF CHII attenuator settings (dB)	2008-04-21
75	VHF Average power read in wave guide(kW)	2008-12-11
76	VHF Start time of RC1 seconds	2015-10-23
77	VHF Start time of RC1 microseconds	2015-10-23
78	VHF Start time of RC2 seconds	2015-10-23

79	VHF Start time of RC2 microseconds	2015-10-23
80	VHF Start time of RC3 seconds	2015-10-23
81	VHF Start time of RC3 microseconds	2015-10-23

