



## Parameter block layout

### ESR 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)
- the data, d\_data (2×32 bit complex reals)
- the raw samples (not always present), d\_raw (216 bit complex integers)
- Bit 65-74 is 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 (not available at UHF remotes) and VHF parameter 72 gives the power status on the Tromsø, systems as follow:
  - 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 are decoded as follows:
  - bit 0:1 Antenna phasing
    - 0 allB
    - 2 allA
  - 3 splitbit 2:5 IF setup
    - 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 Positive logic Note these values are integers

### 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	% power tx1 klystron a (of 62.5 kW)	
14	% power tx1 klystron b	
15	% power tx2 klystron a	
16	% power tx2 klystron b	
17	% power tx3 klystron a	
18	% power tx3 klystron b	



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19	% power tx4 klystron a	
20	% power tx4 klystron b	
21	Noise injection calibration, K	
22	Pre-integration factor	
23	% power tx5 klystron a	
24	% power tx5 klystron b	
25	% power tx6 klystron a	
26	% power tx6 klystron b	
27	% power tx7 klystron a	
28	% power tx7 klystron b	
29	% power tx8 klystron a	
30	% 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 ID (1-8)	1999-11-12



## Parameter block layout

42	Remote antenna intersection range, m	2003-02-28
43-62	User parameters	2003-07-23
63	High voltage reading (V)	2003-09-01
64	Loop counter	2004-02-01
65	ESR Peak power read from power meter (W)	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
65	UHF Peak power read from wave guide (W)	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 (W)	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



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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