

C fB <8 &% _! <% F% #% s% 0

> .NS? .G7

2008.07.25

35 MW

rdf %U% !%\$%k\$N%U%)! <% ^%C%H\$K\$D\$ \$\$F\$ ^\$H\$a\$?\$N\$G\$9p\$9\$K! #> \ \$ 7\$ /\$O! "GO> 1\$ 5\$ s\$Nweb %Z! <% 8
[1] \$ r; >H! #

1 =xO@

rdf \$Oriken data format \$N\$ 3\$ H\$G! "%P%\$%J% j7A<0\$N%U% !%\$%k%U%)! <% ^%C%H\$G\$ "\$k! #babarl \$H\$ \$\$C\$?
DAQ %W%#%0% i% '\$K\$h\$C\$F@8@ . \$ 5\$ 1! "ANALYS, ANAPAW \$H\$ \$\$C\$?2 r@O%W%#%0% i% '\$K\$h\$C\$FF I\$ _9~\$ ^
\$ 1\$ k! #

0J2<! "%G! <% ?\$K4X\$9\$kJQ49<0\$ r< (\$9! #Bgt8; z\$NK \$O1024 G\ \$ rI=9(K=1024)! #block, word \$O! "rdf
%U% !%\$%k\$GMQ\$ \$\$k%G! <% ?\$NC10L! #

- 1 block = 8 Kwords = 16 KBytes = 128 Kbits
- 1 word = 2 Bytes = 16 bits
- 1 Byte = 8 bits

0x \$G; C\$ ^\$kJ8; zNs\$O16 ?J?t\$ rI=9! #16 ?J?t1 7e\$G4 bits \$N%G! <% ?\$ rI=8=\$G\$-\$k\$N\$G! "16 ?J?t2 7e
\$G1 Byte = 8 bits \$rI=8=\$G\$-\$k! #ASCII J8; z\$O1 J8; z\$G1 Byte I ,mW\$J\$N\$G! "16 ?J?t2 7e\$G ASCII
J8; z\$r1 J8; zI=8=\$G\$-\$k! #

- 0xff = 255
- 0x10 = 16
- 0x41 = ACSII J8; z\$N'A'

2 %G! <% ?%U%)! <% ^%C%H

01\$D\$Nrdf %U% !%\$%k\$O! 'Header It, Event It, Ender It\$N3 \$D\$NI tJ, \$KJ, \$ 1\$ i\$ 1\$ k! #Header It! 'Ender
It\$O1 Block \$+\$ i@ . \$ j! "\$=\$ 1\$ >\$ 1 Header Block! "Ender Block \$H\$F\$P\$ 1\$ k! #Event It\$OEvent Block
\$H\$F\$P\$ 1\$ k\$ \$\$ /\$D\$+\$Nblock \$+\$ i@ . \$ k! #Event Block \$ r1 \$D\$ @ \$ 1;)\$D\$ h\$ &\$ J: > . \$Nrdf %U% !%\$%k\$N%5% \$
% :\$O! "3 blocks = 48 KBytes \$H\$J\$ k! #%\$Y% s% H%G! <% ?\$ r;)\$?\$ J\$ \$! JL50UL# \$ J! Krdf %U% !%\$%k\$N%5% \$% :
\$O2 blobks = 32 KBytes \$G\$ "\$k! #

2.1 Header Block

Header Block \$N%G! <? ?\$O? ^1 \$N\$h\$ &\$K\$ J\$K! #%G! <? ?\$NG [CV\$O! "I=1 \$H\$ J\$K! #? ^1 \$N%G! <? ?\$O word
 C10L! "16 ?J?t\$G! = \$7\$F\$ \$\$k\$G! "0 1\$D\$N; MBQ\$O2 Bytes = 16 bits \$H\$ J\$K! #

	0	1	2	3	4	5	6	7
0	0001	0000	0000	0000	0000	0000	0000	0000
8	0000	0000	5552	2d4e	3030	3931	2020	5453
16	5241	2054	3e3d	3120	3a38	3631	353a	2037
24	5320	4f54	2050	3e3d	5820	3a58	5858	583a
32	2058	2020	7250	6e69	2074	3e2d	5820	3a58
40	5858	583a	2058	3020	2d32	754a	2d6c	3820
48	0000	0000	6548	6461	7265	2020	2020	2020
56	2020	2020	2020	2020	2020	2020	2020	2020
64	2020	2020	2020	2020	2020	2020	2020	2020
72	2020	2020	2020	2020	2020	2020	2020	2020
80	2020	2020	2020	2020	2020	2020	2020	2020
88	2020	2020	2020	2020	2020	2020	2020	2020
96	2020	2020	2020	2020	2020	2020	2020	2020
104	2020	2020	2020	2020	2020	2020	2020	2020
112	2020	2020	2020	2020	2020	2020	2020	2020
120	2020	2020	2020	2020	2020	2020	2020	2020
128	2020	2020	0000	0000	0000	0000	0000	0000
136	0000	0000	0000	0000	0000	0000	0000	0000
...

? ^ 1: Header Block

word	data	OUL#
0	0001	Header Block \$N; O\$ ^\$ j\$ rI = \$ 9
1-9	0000	0 \$ rF ~\$ 1\$ k
10-13	-	RUN \$NHV9 f\$ rI = \$ 9 (ASCII J8; zNs)
14	2020	% % Z! < % 9 2 J8; z (ASCII J8; zNs)
15-23	-	START ; ~9 c\$ rI = \$ 9 (ASCII J8; zNs)
24-32	-	STOP ; ~9 c\$ rI = \$ 9 (ASCII J8; zNs)
33	2020	% % Z! < % 9 2 J8; z (ASCII J8; zNs)
34-41	-	Print Time \$ rI = \$ 9 (ASCII J8; zNs)
42-47	-	Print Date \$ rI = \$ 9 (ASCII J8; zNs)
48-49	0000	0 \$ rF ~\$ 1\$ k
50-89	-	RUN % % ?! < % H; ~\$ N% 3% a% s% H (ASCII J8; zNs)
90-129	2020	% % Z! < % 9 J8; z\$ GKd\$ a\$ k (ASCII J8; zNs)
130-	0000	0 \$ rF ~\$ 1\$ k

I=1: Header Block %G! <? ?G [CV

2.2 Event Block

Event Block \$N%G! <% ?\$O! "?^2 \$N\$h\$ &\$K\$ J\$K! #G! <% ?\$NG [CV\$O! "I=2 \$H\$ J\$K! #Event data I t\$K\$O! " J#?t\$NEvent data \$, J]B\$ 5\$ 1\$ k! #0 1\$ D\$N% \$% Y% s% H\$G! "0 1\$ D\$N%G! <% ?9=B\$\$ r7A: n\$ k! #

?^2 \$NEvent Block \$O3 \$D\$Nevent \$r4^\$ Nc\$G\$ "\$k! #eV\$NItJ, \$, word ?t! "ID Ey\$N>pJ\$G\$ "\$j! "eD \$NItJ, \$, %b% 8%e! <% k\$ +\$ i\$N% 8%G! <% ?\$G\$ "\$k! #Event data \$NG [CV\$ rI=3 \$K< (\$9! # \$3\$ 3\$G! "Segment \$H\$O Event data \$NC f\$N\$ 5\$ i\$K> . \$5\$ J%G! <% ?9=B\$\$G\$ "\$k! #8 !=P4 o\$N<aN ` \$, B??t\$ "\$k\$h\$ &\$ JDAQ %7% 9%F% ` \$G MQ\$ \$\$ i\$ 1\$ k! #Nc\$ (\$P0 1\$ D\$N8 !=P4 o\$ +\$ i\$N%G! <% ?\$K0 1\$ D\$NSegment \$ r3 d\$ jEv\$F! "Segment ID \$ rMQ\$ \$\$ F %G! <% ?\$r; >H\$ 9\$ k! #

	0	1	2	3	4	5	6	7
0	0000	0000	0000	0000	8013	0001	0001	0010
8	0001	0001	a007	6dc4	d900	003b	0000	002c
16	0010	002b	0020	0021	0030	0001	5555	8013
24	0001	0002	0010	0001	0001	a007	84bc	d900
32	003e	0000	0035	0010	002f	0020	002a	0030
40	0001	5555	8013	0001	0003	0010	0001	0001
48	a007	097f	d900	003c	0000	002e	0010	002e
56	0020	0025	0030	0001	5555	ffff	ffff	0000
64	0000	0000	0000	0000	0000	0000	0000	0000
72	0000	0000	0000	0000	0000	0000	0000	0000
80	0000	0000	0000	0000	0000	0000	0000	0000
88	0000	0000	0000	0000	0000	0000	0000	0000
96	0000	0000	0000	0000	0000	0000	0000	0000
104	0000	0000	0000	0000	0000	0000	0000	0000
112	0000	0000	0000	0000	0000	0000	0000	0000
...

?^2: Event Block

word	data	0UL#
0-3	0000	Event Block \$N; O\$ ^\$ j\$ rI=\$ 9
4-	-	Event data I t
-	ffffff	Event data \$N=*\$ o\$ j\$ rI=\$ 9

I=2: Event Block %G! <% ?G [CV

word	data	0UL#
0	-	Event data \$Nword ?t ! J\$ 3\$Nword \$bword ?t\$H\$ 7\$F% +% &% s%H\$ 9\$ k! K
1	0001	FID (>o\$K1)
2	0001-	Event ID ! J l \$ +\$ i; O\$ ^\$ k ! u Block \$, JQ\$ o\$ k\$H\$ ^\$? l \$ +\$ i% +% &% s%H! K
3	-	Segment \$Nword ?t ! J\$ 3\$Nword \$bword ?t\$H\$ 7\$F% +% &% s%H\$ 9\$ k! K
4	-	Segment ID (babar l \$N%!=! <% 9\$ G@_ j)
5-	-	%b% 8%e! <% k\$ +\$ i\$N% 8%G! <% ?

I=3: event data G [CV

Cm0U) Event data C f\$N0 HVL \ \$Nword \$OEvent data \$Nword ?t\$ rI=\$ 9\$, ! "word ?t\$=\$N\$ b\$N\$ O3 JG<\$ 5 \$ 1\$ J\$ \$! #B (\$A! " : >e0Lbit \$r1 \$H\$ 7\$?2 Bytes \$N%G! <% ?\$, word ?t\$H\$ 7\$F3 JG<\$ 5\$ 1\$ k! #Nc\$ (\$P! "Event

data \$Nword ?t\$, 3 \$N; ~\$0x8003! JF s? J? t\$GI = \$ 9\$H1000 0000 0000 0011! K16 \$N; ~\$0x8010! JF s? J ?t\$GI = \$ 9\$H1000 0000 0001 0000! K\$H\$ J\$ k! #

2.3 Ender Block

Ender Block \$O! "?^3 \$N\$h\$ &\$K\$ J\$ k! #G! <? \$NG [CV\$O! "I=4 \$H\$ J\$ k! #

	0	1	2	3	4	5	6	7
0	ffff	0000	0000	0000	0000	0000	0000	0000
8	0000	0000	5552	2d4e	3030	3931	2020	5453
16	5241	2054	3e3d	3120	3a38	3631	353a	2037
24	5320	4f54	2050	3e3d	3020	3a39	3030	303a
32	2030	2020	7250	6e69	2074	3e2d	5820	3a58
40	5858	583a	2058	3020	2d31	614a	2d6e	3037
48	0000	0000	6548	6461	7265	2020	2020	2020
56	2020	2020	2020	2020	2020	2020	2020	2020
64	2020	2020	2020	2020	2020	2020	2020	2020
72	2020	2020	2020	2020	2020	2020	2020	2020
80	2020	2020	2020	2020	2020	2020	2020	2020
88	2020	2020	6e45	6564	2072	2020	2020	2020
96	2020	2020	2020	2020	2020	2020	2020	2020
104	2020	2020	2020	2020	2020	2020	2020	2020
112	2020	2020	2020	2020	2020	2020	2020	2020
120	2020	2020	2020	2020	2020	2020	2020	2020
128	2020	2020	0000	0000	0000	0000	0000	0000
136	0000	0000	0000	0000	0000	0000	0000	0000
...

?^3: Ender Block

word	data	OUL#
0	ffff	Ender Block \$N; O\$ ^\$ j\$ rI = \$ 9
1-9	0000	0 \$ rF ~\$ 1\$ k
10-13	-	RUN \$NHV9 f\$ rI = \$ 9 (ASCII J8; zNs)
14	2020	% 9% Z! <? 9 2 J8; z (ASCII J8; zNs)
15-23	-	START ; ~9 o\$ rI = \$ 9 (ASCII J8; zNs)
24-32	-	STOP ; ~9 o\$ rI = \$ 9 (ASCII J8; zNs)
33	2020	% 9% Z! <? 9 2 J8; z (ASCII J8; zNs)
34-41	-	Print Time \$ rI = \$ 9 (ASCII J8; zNs)
42-47	-	Print Date \$ rI = \$ 9 (ASCII J8; zNs)
48-49	0000	0 \$ rF ~\$ 1\$ k
50-89	-	RUN % 9% ?! <? H; ~\$ N% 3% a% s% H (ASCII J8; zNs)
90-129	2020	RUN % 9% H% C% W; ~\$ N% 3% a% s% H (ASCII J8; zNs)
130-	0000	0 \$ rF ~\$ 1\$ k

I=4: Ender Block %G! <? ?G [CV

3 Appendix

3.1 % (%S%G%#%"%S

B?%P%\$%H\$N%G! <? \$ r% a%b% j\$K3JG<\$ 7\$F\$ \$\$ /J)K!\$K\$O! "<g\$K% S% C% 0% (%S%G%#% "%s\$H% j%H%k% (%S%G%#% " %s\$N# 2<dN '\$,\$ "\$k! #S% C% 0% (%S%G%#% "%s\$G\$O! "B?%P%\$%H%G! <? \$N>e0L%P%\$%H\$+\$i% "%I%1%9\$,>e0L\$N%a %b% j\$K3JG<\$ 7\$F\$ \$\$ /! #% j%H%k% (%S%G%#% "%s\$G\$O! "B?%P%\$%H%G! <? \$N2<0L%P%\$%H\$+\$i% "%I%1%9\$,2<0L\$N %a%b% j\$K3JG<\$ 7\$F\$ \$\$ /! #Nc\$ (\$P0x1234 \$H\$ \$\$ & 2 Bytes \$N%G! <? \$ r9M\$ (\$k! #S% C% 0% (%S%G%#% "%s\$G\$O! " %a%b% j\$K%G! <? \$ r 12 34 \$H3JG<\$ 7! "% j%H%k% (%S%G%#% "%s\$G\$O 34 12 \$H3JG<\$ 9\$k! #

rdf %U% !%\$%k\$G\$O! "l word \$, 2 Bytes \$G9=€ .5\$ 1\$k\$?\$a% (%S%G%#% "%s\$ r9M\$ (\$kI,MW\$, "\$k! #rdf %U% ! %\$%k\$G\$O! "Header Block \$H Ender Block \$NASCII J8; zNsITJ,\$ r= |\$ \$\$ F% j%H%k% (%S%G%#% "%s\$G\$ "\$k! #

3.2 Emacs \$ rMQ\$ \$\$F%P%\$%J% j%G! <? \$ rI=< (\$ 9\$k

Emacs \$G%P%\$%J% j%G! <? \$ r16 ?J?t\$H\$ 7\$FT=< (\$ 9\$k\$K\$O! "%P%\$%J% j%G! <? \$ r3+\$ \$\$?\$ i M-x hexl-mode \$HBGSD(Alt Kt\$OEsc \$r2!\$ 7\$J\$, \$ix \$r2!\$ 7\$F! "Alt Kt\$OEsc \$rN%\$ 7! "hexl-mode \$HF -N0) !#Emacs \$G %O%P%\$%J% j%G! <? \$ r1 Byte \$ 4\$H\$K16 ?J?t 2 7e\$GI=< (\$ 9\$k! # \$ 3\$N\$?\$a! "rdf %U% !%\$%k\$NASCII J8; zNs 0J3O\$N\$8; zNs\$r8+\$k> 19g! "2 Bytes \$Nword C10L\$G9=€ .5\$ 1\$k\$?\$a! "6v?t%P%\$%HL\\$H4 q?t%P%\$%HL\\$rF~ \$ 14 9\$ (\$F9M\$ (\$J\$ 1\$ 1\$P\$J\$ i\$J\$ \$! #0J2<! "<B: j\$Krdf %U% !%\$%k\$ rI=< (\$ 7\$?7k2L\$ r< (\$ 9! #

```

00000000: 0100 0000 0000 0000 0000 0000 0000 0000 .....
00000010: 0000 0000 5255 4e2d 3030 3139 2020 5354 ...RUN-0019 ST
00000020: 4152 5420 3d3e 2031 383a 3136 3a35 3720 ART => 18:16:57
00000030: 2053 544f 5020 3d3e 2058 583a 5858 3a58 STOP => XX:XX:X
00000040: 5820 2020 5072 696e 7420 2d3e 2058 583a X Print -> XX:
00000050: 5858 3a58 5820 2030 322d 4a75 6c2d 3038 XX:XX 02-Jul-08
00000060: 0000 0000 4865 6164 6572 2020 2020 2020 .... Header
00000070: 2020 2020 2020 2020 2020 2020 2020 2020
00000080: 2020 2020 2020 2020 2020 2020 2020 2020
00000090: 2020 2020 2020 2020 2020 2020 2020 2020
000000a0: 2020 2020 2020 2020 2020 2020 2020 2020
000000b0: 2020 2020 2020 2020 2020 2020 2020 2020
000000c0: 2020 2020 2020 2020 2020 2020 2020 2020
000000d0: 2020 2020 2020 2020 2020 2020 2020 2020
000000e0: 2020 2020 2020 2020 2020 2020 2020 2020
000000f0: 2020 2020 2020 2020 2020 2020 2020 2020
00000100: 2020 2020 0000 0000 0000 0000 0000 0000 .....
00000110: 0000 0000 0000 0000 0000 0000 0000 0000 .....
00008120: 0000 0000 0000 0000 0000 0000 0000 0000 .....
~~~~~

```

```

00004000: 0000 0000 0000 0000 1380 0100 0100 1000 .....
00004010: 0100 0100 07a0 c46d 00d9 3b00 0000 2c00 .....m.;...
00004020: 1000 2b00 2000 2100 3000 0100 5555 1380 ..+. .!.0...UU..
00004030: 0100 0200 1000 0100 0100 07a0 8c84 00d9 .....
00004040: 3e00 0000 3500 1000 2f00 2000 2a00 3000 >...5.../. .*0.
00004050: 0100 5555 1380 0100 0300 1000 0100 0100 ..UU.....
00004060: 07a0 f709 00d9 3c00 0000 2e00 1000 2e00 ..... <.....
00004070: 2000 2500 3000 0100 5555 ffff ffff 0000 .%.0...UU.....
00004080: 0000 0000 0000 0000 0000 0000 0000 0000 .....
00004090: 0000 0000 0000 0000 0000 0000 0000 0000 .....

```

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-----
00008000: ffff 0000 0000 0000 0000 0000 0000 0000 .....
00008010: 0000 0000 5255 4e2d 3030 3139 2020 5354 ... RUN-0019 ST
00008020: 4152 5420 3d3e 2031 383a 3136 3a35 3720 ART => 18:16:57
00008030: 2053 544f 5020 3d3e 2030 393a 3030 3a30 STOP => 09:00:0
00008040: 3020 2020 5072 696e 7420 2d3e 2058 583a 0 Print -> XX:
00008050: 5858 3a58 5820 2030 312d 4a61 6e2d 3730 XX:XX 01-Jan-70
00000060: 0000 0000 4865 6164 6572 2020 2020 2020 .... Header
00008070: 2020 2020 2020 2020 2020 2020 2020 2020
00008080: 2020 2020 2020 2020 2020 2020 2020 2020
00008090: 2020 2020 2020 2020 2020 2020 2020 2020
000080a0: 2020 2020 2020 2020 2020 2020 2020 2020
00008060: 2020 2020 456e 6465 7220 2020 2020 2020 .... Ender
000080c0: 2020 2020 2020 2020 2020 2020 2020 2020
000080d0: 2020 2020 2020 2020 2020 2020 2020 2020
000080e0: 2020 2020 2020 2020 2020 2020 2020 2020
000080f0: 2020 2020 2020 2020 2020 2020 2020 2020
00008100: 2020 2020 0000 0000 0000 0000 0000 0000 .....
00008110: 0000 0000 0000 0000 0000 0000 0000 0000 .....
00008120: 0000 0000 0000 0000 0000 0000 0000 0000 .....

```

3.3 ASCII 3! <I

3031	3233	3435	3637	3839	4142	4344	4546	0123456789ABCDEF
4748	494a	4b4c	4d4e	4f50	5152	5354	5556	GHIJKLMNOPQRSTU
5758	595a	6162	6364	6566	6768	696a	6b6c	WXYZabcdefghijklmnop
6d6e	6f70	7172	7374	7576	7778	797a	2021	mnopqrstuvwxyz !
2223	2425	2627	2829	2a2b	2c2d	2e2f	3a3b	"#\$%&'()*+,-./:;
3c3d	3e3f	405b	5c5d	5e5f	607b	7c7e	7d	<=>?@[\\]^_`{ ~}

; 29MJ88%

[1] G>1 = (C1, "The BAQ/Data Acquisition/DAQ System," <http://rarfaxp.riken.go.jp/baba/acquisition/system/index.html>