

mbs2asc - Convert MBS Data to ASCII

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1 Intro

Program `mbs2asc` is intended to display MBS data buffers in an ASCII representation. It is mainly designed as a diagnosis tool in case of formatting problems, but may also be used to manage and evaluate data in a human-readable form.

2 Installation

- download tar archive from `MARaBQU`'s home page
- unpack archive: `tar xzf mbs2asc.tgz`
- perform "make" step:

```
cd mbs2asc/src
make clean all
./mbs2asc
```

3 Usage

```
./mbs2asc [-r <rcFile>] [-n <maxEvents>] [-t <rdoTrig>] [-f <dgfFmt>]  
          [-d <sevtType>] [-v] <mbsFile>
```

- **<mbsFile>**
MBS raw data file to be read. Has to contain either original `.lmd` (MBS list mode) data or special `.med` (MBS event) data.
- **-r <rcFile>**
take indices and definitions from `rcFile` normally produced during a `./Config` step (e.g. `.DGFCtrl.rc` in a MINIBALL experiment). Applying this argument allows `mbs2asc` to assign names to module numbers and subevent numbers, resp.
- **-n <maxEvents>**
process `maxEvents` events only.
- **-t <rdoTrig>**
use `rdoTrig` as readout trigger for this run. Default is 1.
- **-f <dgfFmt>**
use format descriptor `dgfFmt` in DGF-4C buffers in case of format errors.
- **-d <sevtType>**
special dump mode: raw data as originating from subevent dumps during a `MARaBQU` session. Data don't have MBS event/subevent headers but consist of plain subevent data. Subevent type `sevtType` has to be either `dgf` or `caen`, file extension should be `.dmp`.
- **-v**
verbose mode: output hex dump in addition to other data.

4 Output

mbs2asc produces pure ASCII output. Real data are preceded by a header describing the actual arguments as well as key words and formats.

4.1 Header

```
# Program           : mbs2asc
# Syntax            : [-r <rcFile>] [-n <maxEvents>] [-t <rdoTrig>] [-f <dgfFmt>] [-d <sevtType>] [-v] <mbsFile>
# Arguments         : -r .DGFCControl.rc -n 2 /o/exp/miniball/koeln-040510/run140.med
# Input             : /o/exp/miniball/koeln-040510/run140.med
# Indices & defs    : .DGFCControl.rc
# Event trigger(s)  : 1
# Max number of events : 2
# Verbose mode      : off
# Formats: [MBS:Event] MBS EVT <type> <subtype> <trigger> <evtNo> <evtNoMbs> # <comments>
#               printf("%-6s%-6s%8d%8d%8d%8d%8d # %s\n", ...);
# [MBS:Subevent] MBS SEVT <type> <subtype> <serial> # <comments>
#               printf("%-6s%-6s%8d%8d%8d%8d%8d # %s\n", ...);
# [DGF-4C:Buffer] DGF BUF <wc> <module> <format> <t48> <t32> <t16> <time> # <comments>
#               printf("%-6s%-6s%8d%8d%8d%8d%8d%8d%16lld # %s\n", ...);
# [DGF-4C:Event] DGF EVT <hitpattern> <t32> <t16> <time> # <comments>
#               printf("%-6s%-6s%8d%32d%8d%16lld # %s\n", ...);
# [DGF-4C:Channel] DGF CHN <channel> <energy> <fastTrigTime> <time> # <comments>
#               printf("%-6s%-6s%8d%8d%32d%16lld # %s\n", ...);
# [Caen:Header] CAEN HDR <wc> <module> # <comments>
#               printf("%-6s%-6s%8d%8d # %s\n", ...);
# [Caen:Channel] CAEN CHN <chn> <data> # <comments>
#               printf("%-6s%-6s%8d%8d # %s\n", ...);
# [Caen:EndOfEvent] CAEN EOE <evtCount> # <comments>
#               printf("%-6s%-6s%8d # %s\n", ...);
```

4.2 Data

```
MBS  EVT      10      1      14      1 1594049      # start acquisition (trigger #14)
MBS  EVT      10      1      1       2 1594050      # readout (trigger #1)
MBS  SEVT     9000     1     999      # subevent "Time stamp"
MBS  SEVT      10     43     11      # subevent "psevt1"
CAEN HDR       3     51      # module "adc1"
CAEN CHN       0    2702
CAEN CHN       1     443
CAEN CHN       2     990
CAEN EOE       0
CAEN HDR       3     51      # module "adc1"
CAEN CHN       0    1443
CAEN CHN       1     378
```

CAEN	CHN	2	966						
CAEN	EOE	1							
CAEN	HDR	3	51						# module "adc1"
CAEN	CHN	0	2686						
CAEN	CHN	1	423						
CAEN	CHN	2	975						
CAEN	EOE	2							
CAEN	HDR	3	51						# module "adc1"
CAEN	CHN	0	2865						
CAEN	CHN	1	283						
CAEN	CHN	2	964						
CAEN	EOE	3							
.....									
MBS	SEVT	10	23	1					# subevent "clu1"
MBS	SEVT	10	23	2					# subevent "clu2"
DGF	BUF	36	7	257	0	0	65167	65167	# module "dgg21"
DGF	EVT	7				1	17443	82979	
DGF	CHN	0	2663				17468	83004	
DGF	CHN	1	0				17468	83004	
DGF	CHN	2	0				17468	83004	
DGF	BUF	45	8	257	0	0	65167	65167	# module "dgg22"
DGF	EVT	15				1	17443	82979	
DGF	CHN	0	2541				17468	83004	
DGF	CHN	1	0				17468	83004	
DGF	CHN	2	0				17468	83004	
DGF	CHN	3	0				17468	83004	
DGF	BUF	36	9	257	0	0	65166	65166	# module "dgg23"
DGF	EVT	7				3	5923	202531	
DGF	CHN	0	12127				5947	202555	
DGF	CHN	1	0				5947	202555	
DGF	CHN	2	0				5947	202555	
DGF	BUF	45	10	257	0	0	65165	65165	# module "dgg24"
DGF	EVT	15				3	5923	202531	
DGF	CHN	0	0				5947	202555	
DGF	CHN	1	0				5947	202555	
DGF	CHN	2	12082				5947	202555	
DGF	CHN	3	65449				5947	202555	
.....									

4.3 Data (Verbose Mode)

```

MBS  EVT      10      1      14      1 1594049          # start acquisition (trigger #14)
MBS  EVT      10      1      1       2 1594050          # readout (trigger #1)
MBS  SEVT     9000     1     999          # subevent "Time stamp"
MBS  SEVT     10     43     11          # subevent "psevt1"
CAEN  HDR       3     51          # 0200 0333 # module "adc1"
CAEN  CHN       0  2702          # 0000 4a8e
CAEN  CHN       1   443          # 0001 41bb
CAEN  CHN       2   990          # 0002 43de
CAEN  EOE       0          # 0400 0000
CAEN  HDR       3     51          # 0200 0333 # module "adc1"
CAEN  CHN       0  1443          # 0000 45a3
CAEN  CHN       1   378          # 0001 417a
CAEN  CHN       2   966          # 0002 43c6
CAEN  EOE       1          # 0400 0001
CAEN  HDR       3     51          # 0200 0333 # module "adc1"
CAEN  CHN       0  2686          # 0000 4a7e
CAEN  CHN       1   423          # 0001 41a7
CAEN  CHN       2   975          # 0002 43cf
CAEN  EOE       2          # 0400 0002
.....
MBS  SEVT     10     23      2          # subevent "clu2"
DGF  BUF      36      7    257      0      0  65167          65167 # 0024 0007 1101 0000 0000 fe8f # module "dgf21"
DGF  EVT       7          1  17443          82979 # 0007 0001 4423
DGF  CHN       0  2663          17468          83004 # 0008 443c 0a67 1618 1af0 0000 0000 0000
DGF  CHN       1      0          17468          83004 # 0008 443c 0000 0000 0000 ffd5 000b 0000
DGF  CHN       2      0          17468          83004 # 0008 443c 0000 0daf 0000 002c 0003 0000
DGF  BUF      45      8    257      0      0  65167          65167 # 002d 0008 1101 0000 0000 fe8f # module "dgf22"
DGF  EVT      15          1  17443          82979 # 000f 0001 4423
DGF  CHN       0  2541          17468          83004 # 0008 443c 09ed 0000 0000 ff70 0021 0000
DGF  CHN       1      0          17468          83004 # 0008 443c 0000 0c80 0000 ffe8 0006 0000
DGF  CHN       2      0          17468          83004 # 0008 443c 0000 0000 0000 0015 001d 0000
DGF  CHN       3      0          17468          83004 # 0008 443c 0000 0000 0000 ffee 0018 0000
DGF  BUF      36      9    257      0      0  65166          65166 # 0024 0009 1101 0000 0000 fe8e # module "dgf23"
DGF  EVT       7          3   5923          202531 # 0007 0003 1723
DGF  CHN       0 12127          5947          202555 # 0008 173b 2f5f 1770 1e57 0000 0000 0000
DGF  CHN       1      0          5947          202555 # 0008 173b 0000 0000 0000 ffe1 0010 0000
DGF  CHN       2      0          5947          202555 # 0008 173b 0000 0000 0000 ffd7 0016 0000
DGF  BUF      45     10    257      0      0  65165          65165 # 002d 000a 1101 0000 0000 fe8d # module "dgf24"
DGF  EVT      15          3   5923          202531 # 000f 0003 1723
DGF  CHN       0      0          5947          202555 # 0008 173b 0000 0000 0000 ffe7 0015 0000
DGF  CHN       1      0          5947          202555 # 0008 173b 0000 0000 0000 0014 001d 0000
DGF  CHN       2 12082          5947          202555 # 0008 173b 2f32 0000 0000 ffa9 0022 0000
DGF  CHN       3  65449          5947          202555 # 0008 173b ffa9 0000 0000 0019 000c 0000
.....

```