NAME
>   vulomflash − Handle FPGA firmware in VULOM/TRIDI flash memory.

SYNOPSIS
>   **vulomflash −−addr=A [file.rbt[,comment.txt]] [COMMAND]**

DESCRIPTION
>   List, read and write firmware in the VULOM or TRIDI flash memory. The flash memory of a VULOM or
>   TRIDI has 8 independent ranges. When powered on, the module will automatically load and start the
>   FPGA firmware in range 0.

OPTIONS
>   **−−addr=A**
>>   Select the VME address **A** of the module to handle. The address is given in hexadecimal.
>
>   **−−help**   Display a short help text and exit.

FIRMWARE FILE
>   The firmware to be programmed or verified is loaded from a .rbt file, given on the command line. A plain
>   text file can be stored in a comment region of the flash range together with the firmware for easy identifica-
>   tion. *vulomflash* mandates the use of such a file (use /dev/null to force an empty file). For easier invoca-
>   tion, if the name of the comment file is not specified, *vulomflash* will try trlo_compile_*XXX*.txt, based on
>   the .rbt filename, if named with a known *prefix_XXX*.rbt.

COMMANDS
>   One command can be given for *vulomflash* to execute:
>
>   **−−read**   For test purposes, read from the module at VME offset BASE+0x0 (FPGA space), and
>   BASE+RANGE_REG (CPLD space).
>
>   If the module is running TRLO II, the four high hexadecimal values will be a part of the version
>   MD5SUM. With a newer TRLO II firmware, the lower will be the TRIMI (TRIVA mimic) status
>   register.
>
>   **−−readprogs[=full]**
>>   Read and print the comment field contents for all ranges of the flash memory. Unless **full** is given,
>>   comment fields for TRLO II firmwares are summarised on one line per item.
>
>   **−−restart=N**
>>   Instruct the module to load the firmware of flash range **N** into the FPGA and restart the FPGA.
>
>   **−−verify=N**
>>   Compare the content of flash range **N** with the loaded .rbt file.
>
>   **−−extract=N,file**
>>   Dump the content of flash range **N** into an .rbt-like **file**. (Some editing is required if the content
>>   are to be used for writing.)
>
>   **−−prog=N**
>>   Write the content of the loaded .rbt file into flash range **N**.
>>
>>   Programming will only be performed if the content of the flash differs from the new content. The
>>   flash range is automatically erased.
>
>   **−−erase=N**
>>   Erase the contents of flash range **N**.

EXIT STATUS
>   0 after successfully operation, 1 on failure.

EXAMPLES

      vulomflash −−addr=9 −−readprogs

          Check the stored firmwares in a module at VME address 0x09.

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      Based on the original erase and flash programs written by Wolfgang Ott.

SEE ALSO

      trloctrl(1), **trimictrl**(1)

BUGS

      Some VULOM4B and TRIDI1 modules do not restart (i.e. load) firmware into the FPGA from non-0 flash memory ranges. This can by fixed by a CPLD firmware upgrade.