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How to set VN663 discriminator thresholds

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Abstract

This note explains how to set VN663 discriminator thresholds.

1 Introduction

The CAEN VN663 discriminator [1] is a 32 channels double threshold discriminator. The high threshold level is the discriminating one and must be set to the desired value. The low threshold level is the "timing threshold" and must be kept to a value quite lower than the range of input amplitudes, in order to reduce discriminator time walk.

Thresholds can be set either locally on the front panel of the discriminator or remotely using a dedicated software. Locally both high and low threshold values can be set globally, i.e. one value for all the channels; In remote mode high threshold can be set individually on each channel, while the low threshold is common for groups of 8 channels. Thus, there is a low threshold value for channels form 0 to 7, an other one for channels from 8 to 15, and so on. To switch from remote to local mode a switch is available on the front panel of each discriminator.

To set thresholds locally, nothing is necessary but a screwdriver and a voltmeter. To set thresholds remotely, first set the module in remote mode using the front panel switch and then follow one of the procedures illustrated in the following sections.

2 How setting VN663 thresholds using Data Acquisition

DAQ procedure [2] sets VN663 discriminator thresholds during the SETUP. The values loaded are those written in the modlist.dat data file [3]. Inside this file for each discriminator there is a list of 32 high threshold values and 4 low threshold values. Fig. 1 shows modlist.dat file. The threshold values loaded in each module are stored in the event 0 data buffer.

Therefore, to change the threshold values you must edit file modlist.dat (on **fndstb** machine in the directory /home/DAQ/STB/dat) and write the desired values.

3 How setting VN663 thresholds using a dedicated software

VN663 thresholds can be loaded using a dedicated software available on **fndstb** machine. To do this log-on **fndstb** as user “daq” and move to the directory named

/home/DAQ/TEST/testmod

Here you can start **vn663** program to load discriminator thresholds. Note that you must know the number of the crate in which the discriminator is plugged (this number can be read either on the VIC8250 inserted in the first crate slot or on the label placed on the right side of the crate itself), and the module base address (this number is normally written on a label on the top of the front panel. If not, it is necessary to look at the rotary switches placed inside the module [1]). If you want to set different thresholds for each channel you must know that inside the module there is a high threshold register for channel couples. Thus, if you want to set the high threshold value of channel number 1 you MUST also set the value of high threshold of channel number 2.

References

[1] CAEN,”Mod. VN663 32 channels dual threshold discriminator Technical Information Manual”.

[2] P. Cerello et al., FINUDA note 38/FND/ONL/96
P. Gianotti et al., FINUDA note 42/LNF/ONL/97.

[3] P. Gianotti, “FINUDA DAQ USER MANUAL”,
http://www.lnf.infn.it/esperimenti/finuda/private/DAQman.html.

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{DiscfVME

 base =d3370000
 thh_0  =20
 thh_1  =20
 thh_2  =20
 thh_3  =20
 thh_4  =20
 thh_5  =20
 thh_6  =20
 thh_7  =20
 thh_8  =20
 thh_9  =20
 thh_10 =20
 thh_11 =20
 thh_12 =20
 thh_13 =20
 thh_14 =20
 thh_15 =20
 thh_16 =20
 thh_17 =20
 thh_18 =20
 thh_19 =20
 thh_20 =20
 thh_21 =20
 thh_22 =20
 thh_23 =20
 thh_24 =20
 thh_25 =20
 thh_26 =20
 thh_27 =20
 thh_28 =20
 thh_29 =20
 thh_30 =20
 thh_31 =20
 thl_0_7  =10
 thl_8_15 =10
 thl_16_23=10
 thl_24_31=10
}
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Figure 1: The structure of modlist.dat file.