

The scaler rates are from EPICS data base.
the rates come from the discriminators with the thresholds
set in the configuration files either global value or individual
for each channel.

example parameter setting:

TOF:

```
DSC2_WIDTH      20   40
DSC2_THRESHOLD  -12  -12
DSC2_COM_DIR    /gluex/CALIB/ALL/dsc/default
DSC2_COM_VER    default
```

TAGH:

```
DSC2_WIDTH      20   40
DSC2_THRESHOLD  45   45
```

TAGM:

```
DSC2_WIDTH      20   40
DSC2_COM_DIR    /gluex/CALIB/ALL/dsc/winter_2023
DSC2_COM_VER    winter_2023_v1
```

START COUNTER:

```
DSC2_WIDTH      20   40
qqDSC2_THRESHOLD 50   60
```

- A) configuration file is read by "conf_utils.c" in daq/vme/src/roL_1/
- B) discriminator thresholds are set by "dsc_init.c" in daq/vme/src/roL_1
- C) NOTE: parameters are only set for discriminator TDC channels NOT the TRG

TRG:

-
- A) vme_discr_init() defined in rc_vme.c , sets discriminator width and thresholds for both TDC and TRG
 - B) the above code is used in shmem_srv.cc and sets all discriminator values for all detectors with hard coded values!!

```
.....line 246 of shmem_srv.cc
uint16_t THR1=100, THR2=100, pWidth=20;
char my_host[80];
gethostname(my_host, 80);
if (!strncasecmp("rocTAGM",my_host,7))   THR2=12;
else if (!strncasecmp("rocTAGH",my_host,7)) THR2=45;
else if (!strncasecmp("rocPS",my_host,5))  THR2=40;
else if (!strncasecmp("rocBCAL",my_host,6)) THR2=35;
else if (!strncasecmp("rocTOF",my_host,6))  THR2=30;
else if (!strncasecmp("rocST",my_host,5))   THR2=50;
else if (!strncasecmp("roctrig",my_host,7))  THR2=55;

int ret = vme_discr_init(THR1,THR2,pWidth,&Nslots,Dslots,MAX_SLOT); //-
```

so from this we conclude that the width of all discriminators are set to 20 [ns]
and the thresholds

are set to

TAGM 12mV

TAGH 45mV relates to 360 ADC counts above base line 100 ADC counts (full range

500mV)

--> note: there is a severe base line sag at high rates increasing the

effective threshold 10% or more

PS 40mV

BCAL 35mV

TOF 30mV relates to 240 ADC counts above base line (full range 500mV)

ST 50mV relates to 400 ADC counts above base line (full range 500mV)

counters:			[1,+i5]	[16/35]	[16/22]	[19/20/21]
Run#	e-current	Radiator	SC[MHz]	TAGM[MHz]	TAGH[MHz]	TOF[MHz]
121039	900nA	Diamond	0.6/1.6	1.1/3.1	2.67/3.06	0.68/-/-
120847	300nA	Diamond	0.23/0.7	0.61/1.5	1.00/1.15	0.22/0.23/0.54
121163	300nA	Diamond	0.23/0.72	0.45/1.35	1.02/1.16	0.23/0.24/0.55
120582	900nA	Diamond	0.6/1.6	1.65/3.78	2.71/3.04	0.63/-/-
120591	750nA	Diamond	0.54/1.42	1.43/3.38	2.36/2.65	0.55/-/-
120594	570nA	Diamond	0.43/1.17	1.14/2.75	1.88/2.12	0.44/-/-
120596	435nA	Diamond	0.32/0.93	0.86/2.12	1.43/1.61	0.33/-/-