

TEL2 uQPM Operation Note

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The quench protection in TEL2 is done using seven single circuit quench protection monitors (uQPM). This is one for each of the TEL2 Power Supplies/Magnets (main solenoid, 4 short correctors and 2 long correctors).

The TEL2 uQPMs are operated via ACNET parameters located on the T75 Parameter Page (QPM tab). Sub page #1 has two status devices per TEL2 uQPM (see Figure 1). The first device, of the form T:L2QxST, lists all the trips that have occurred in that uQPM (there can be more than one). The second device, of the form T:L2QxSF, shows only the first trip to have occurred in that uQPM (there can be only one). Also, a soft (status) uQPM reset can be done using either of these devices. Shown, in Figure 2, is an image of the S53 Digital Status Page with the TEL2 Main Solenoid status device listed.

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T75 TEL2 QUENCH PROTECTION          SET      D/A    A/D  Com-U  ♦PTools♦
-<FTP>+ *SA♦ X-A/D X=TIME           Y=I: BEAM , I: QXRMI , I: QXID , C B7SHP
COMMAND ----- Eng-U I= 0         I= 0      , 0      , 0      , 0
-< 1>+ r_39 AUTO F= .8             F= 1.2    , 40    , .6     , 100
general hivolt. pickups solnoid correct QPMS      bpms      support
! TEL2 QPM STATUS DEVICES
T: L2QMST      TEL2 QSM Status                .
T: L2Q1ST      TEL2 QSC1 Status                .
T: L2Q2ST      TEL2 QSC2 Status                .
T: L2Q3ST      TEL2 QSC3 Status                .
T: L2Q4ST      TEL2 QSC4 Status                .
T: L2Q5ST      TEL2 QLC1 Status                .
T: L2Q6ST      TEL2 QLC2 Status                .

T: L2QM5F      TEL2 QSM First Status            .
T: L2Q15F      TEL2 QSC1 First Status            .
T: L2Q25F      TEL2 QSC2 First Status            .
T: L2Q35F      TEL2 QSC3 First Status            .
T: L2Q45F      TEL2 QSC4 First Status            .
T: L2Q55F      TEL2 QLC1 First Status            .
T: L2Q65F      TEL2 QLC2 First Status            .

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Figure 1

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S53      DIGITAL STATUS                                     ◆Pgm_Tools◆  AGG CONTRL
PARAM*   *SA◆ X-A/D X=TIME      Y=I: BEAM  , I: QXRMI , I: QXID  , C B7SHP  *RESET
*save    ---- Eng-U I= 0        I= 0      , 0      , 0      , 0      *ON
         r_39 AUTO  F= .8        F= 1.2    , 40    , .6    , 100   *OFF
.global .linac.. .booster ...mi... ..tev... ..sy... .p-bar.. .misc... collider

T: L2QMST      TEL2 QSM Status

bit-15..... ZERO      0 bit-31..... ZERO      0 .....
bit-14..... ZERO      0 bit-30..... ZERO      0 .....
bit-13..... ZERO      0 bit-29..... ZERO      0 *Reset .
bit-12..... ZERO      0 bit-28..... ZERO      0 .....
bit-11..... ZERO      0 bit-27..... ZERO      0 .....
bit-10..... ZERO      0 bit-26..... ZERO      0 .....
bit-9..... ZERO      0 bit-25..... ZERO      0 Alarm is
QUENCH HB LOOPBACK FAIL. OK      0 bit-24..... ZERO      0 ?UNDEFINED
UNDERCURRENT TRIP..... OK      0 bit-23..... ZERO      0 Speech is
OVERCURRENT TRIP..... OK      0 bit-22..... ZERO      0 ?UNDEFINED
LEAD #2 VOLTAGE TRIP.... OK      0 bit-21..... ZERO      0 Edit
LEAD #1 VOLTAGE TRIP.... OK      0 bit-20..... ZERO      0
ANTIQUENCH RELATIVE..... OK      0 bit-19..... ZERO      0
QUENCH RELATIVE..... OK      0 bit-18..... ZERO      0
ANTIQUENCH ABSOLUTE..... OK      0 bit-17..... ZERO      0 New File
QUENCH ABSOLUTE..... OK      0 bit-16..... ZERO      0 Read File

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Figure 2

Following sub page #1 there are 3 sub pages for seven uQPMs. The first two sub pages per uQPM are for settable devices and the last is for read only devices. The read only devices can also be plotted using the Fast Time Plot (FTP) facility.

A spreadsheet listing all the ACNET devices for each of the TEL2 uQPMs, with descriptions, is available at: [\\beamssrv1\eesupt.bd\projects\Embedded Systems\uQPM\TEL2 uQPM ACNET Devices.xls](http://beamssrv1/eesupt.bd/projects/Embedded Systems/uQPM/TEL2 uQPM ACNET Devices.xls).

A spreadsheet listing all the default values of the ACNET devices for each of the TEL2 uQPMs is available at: [\\beamssrv1\eesupt.bd\projects\Embedded Systems\uQPM\TEL uQPM ACNET Device Default Values.xls](http://beamssrv1/eesupt.bd/projects/Embedded Systems/uQPM/TEL uQPM ACNET Device Default Values.xls).

There is also an uQPM Quench Buffer Plotter PC based application available at (you need to be administrator to install this): [\\beamssrv1\eesupt.bd\projects\Labview\SUB_Systems\uQPM\apps\uQPM Quench Buffers\Installer\setup.exe](http://beamssrv1/eesupt.bd/projects/Labview/SUB_Systems/uQPM/apps/uQPM Quench Buffers/Installer/setup.exe)

If ACNET communications should fail, it's possible that the problem is not with the uQPM rather with badmab.fnal.gov. This is the Backdoor-MOOC bridge system and is located in the Transfer Gallery Micropit (TGS-120).