## Table of Contents

Testing Crates, TRMs and related.................................................................1
  Testing Crates in the testing facility.........................................................1
    Preliminary checks.............................................................................1
  Crate power ON.....................................................................................1
  TRM tests.............................................................................................1
    Firmware upgrade procedures..........................................................2
  Varies......................................................................................................3
    How to force chain reset on a TRM......................................................3
    How to Work in Transparent Mode......................................................3
Testing Crates, TRMs and related

Testing Crates in the testing facility

Preliminary checks

These tests have to be done **BEFORE** the insertion of any VME boards.

- the tightness of the crate screws has to be checked, especially the screws holding the cooling panels
- the impedance between the analogic channel and the crate chassis has to be measured. Good values are of the order of 10 kOhm
- put the SERTO quick couplings on the crate, attach the cooling pipes and check if there are some water leakages.
- turn ON the crate (see below how to do it), turn ON the 5V and the 3.3V, then all the VME slot. Now try to turn ON the VPP channel going in the VPPw column. If the VPPwS indicator remains in FAIL status, the whole set of DCDC Converter has to be changed!

Crate power ON

First of all you have to be sure, before to turn ON the LV power supplies, that all the hardware connections have been done. Any wrong (or live) insertion can produce serious damage to the electronics. Then log on into the SY1527 mainframe located on top of VME cosmic crate

- telnet caentoflv1 1527
- user: user
- password: user

From the menu **Main** you select **Channels** (use the TAB key to move through the window)
Reminder: when you turn ON the 48V service, you should see the channels crate plugged (i.e. the **Unplugged** inscription should disappear). If not, something is going wrong. The right power on sequence is the following:

- turn ON the 48V service
- switch ON the **Controller Enable** on the Maciste front panel and enable the channel that you are using
- the Branch Controller is located in the slot 4 of the SY1527. You have to scroll down the telnet window till you see on the right 0.04.xxx
- turn ON the 100 A channel (the Maciste power). If you are using the Maciste channel 00, the corresponding channel is #0.04.029, if you are using the channel 01 is #0.04.059, and if you are using the channel 02 is #0.04.089
- from the menu **Utility** select **Clear Alarm**
- The two groups of channel displayed correspond to the right crate (the top one) and to the left one (the bottom one). **Remember to turn ON always the right crate first!**
- switch ON the 5V channel (Ch# 0.04.013)
- switch ON the 3.3V channel (Ch# 0.04.001)
- the eleven channel between the 3.3V and the 5V are the analog channel placed at the bottom of the crate
- to power ON the VME slot you have to go to the right of the telnet window till the **SlotSt** (slot status) and **SlotPw** (slot power) column
- **Remember that CPDM** (slot 3) **had to be ON before to turn ON any other boards in the crate!**

TRM tests

There is a set of useful routines to check the status of the TDC Boards. You can find the list here
Firmware upgrade procedures

First of all you should plug the ethernet cable coming from the small HUB inside the DRM of the crate under test. Then you can log on with:

- telnet 10.0.8.98
- user: root
- password is not required

Check if the directory /arm has been mounted typing df. You should see an output like:

```
10.0.8.1:/arm  50394964   5386204  42448804  11%  /home
```

If not, you have to do

```
mount -o nolock 10.0.8.1:/arm /home
cd /home/tof/network/
./TestFileSystem w 300
reboot
```

Then log on again and go to the directory /home/tof/Upgrade. To check if the TRM are ready for reprogramming, type the comand

```
# ./Upgrade [slot nr.]
```

For example, if you want to check TRM in slot 4 you have to type

```
# ./Upgrade 4
```

and you should see

```
******************* SLOT 4 *******************
Found TRM with FW-Rev 4
ID Code = 014101CF
```

*It's important to check at least the slots 1, 2, 3 and 4!*  

If you find the message

```
Cant read ID CODE
```

Try first to unplug the LTM

Before to go ahead you must power ON the VPP channel going in the VPPw column. **It MUST be ON and not in Fail. If VPP is off the comand below can seriously damage the hardware!**  
First of all you have to reprogramm the DRM (slot 1) typing

```
./Upgrade 1 -f V1391roc_0677.stp
```

Then the LTM (slot 2) typig

```
./Upgrade 2 -f V1392ltm_rev1_beta.stp
```
Then give the command

```bash
#./UpgradeLeft.sh
```

or

```bash
#./UpgradeRight.sh
```

depending of which crate are you testing. The program will write a log file namely for example `UpgradeLeft.slot4.log`.

A normal completion of the reprogramming has the following output:

```plaintext
Device Programmed: Res=0; ex_code=0.
```

When the reprogramming is finished check all the log files.

## Varies

### How to force chain reset on a TRM

This is the procedure which has to be followed in order to force a chain reset in a TRM when its chains are somehow strange.

First of all start the `trmc` application specifying the required link number using the `-c [linkNb]` option.

```bash
[localhost] > trmc -c 0
```

In `trmc` select the required TRM by pressing on the keyboard the key 'A' and specifying the TRM slot ID. Then press the key 'M' (Access to micro) to enter the micro submenu. Now you have to follow this procedure:

1. press 'W' (write parameter), write 0 0 0 (zero zero zero) and press enter
2. press 'W' (write parameter), write 0 1 0 (zero one zero) and press enter
3. press 'W' (write parameter), write 80 0 0 (eighty zero zero) and press enter
4. press 'W' (write parameter), write 80 1 0 (eighty one zero) and press enter
5. press 'W' (write parameter), write 72 0 0 (seventy-two zero zero) and press enter

Now you are done.
Hope it helps.

### How to Work in Transparent Mode

This paragraph explains how you have to proceed in case you need to set Low Voltages higher than 2.7 V.

1. Log on 1527 as "admin" user (pwd = admin).
2. From the setup menu, select **transparent mode**.
3. You are asked to select a slot. This corresponds to the branch controller slot you are using, usually slot 4 for us.
4. Press "N", corresponding to selecting the Node.
5. The "Crate to Communicate" item selects the maciste channel you are working on. So, press "C" and then type the maciste channel you are using.
6. The "Node to Communicate" item selects the maciste slot on with which you are going to communicate. Usually, slot 0 correspond to the right crate, slot 1 to the left crate, and slot 22 to the maciste itself.
7. If the maciste is still off when you connect, press "N" and type 22 and turn it on: go under the "Pw" (=power) column, and press the space bar (which changes the status. Always press "R" to reset the...
alarms. Press "Q" twice, to go back to the Select Option window.
8. If the "Crate to Communicate" had already been selected to operate on the maciste, just press "N" to select the node, and then type "0" for the right crate, or "1" for the left crate. Otherwise, press "C", select the maciste channel (see point 5), and then select the node as explained here.
9. Press "S" to Start the communication with the crate, and "D" to display the analogic channel of the crate.
10. Reset the alarms with "R".
11. Move to the analogic channels you want to turn on (from CH01 to CH08, tipically), and turn them on (go under "Pw", and press the space bar to change the status.
12. To change the maximum voltage values allowed for the channels, go to the next page (pressing "P"), and change the "SVmax".
13. To change the actual voltage value, change the value in the "V0Set" field of each channel (each channel requires a different value, of course).

That's all folks!