ESA SCP Control

Documentation

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This document describes various features of the SCP control program for use in ESA ILC test experiments.

1. Adjusting trigger timing

Go to

SLC Index > A-Line Index > AB01 Trigger Panel

A set of beam codes exist which hold a number of triggers and other setup items. Normally ESA uses **beam code 3**. You can see this from the **BEAM PROMPT** button which should be set to 3. A list of triggers should show, you can go to the next screen by selecting **Page 2 AB01 Trigs** at the top. Some examples of trigger numbers are given below here

Trig 610	Gate signal for Oregon detector (T-475)
Trig 804	ESA Pedestal trigger (0.1 Hz)
Trig 805	ESA ILC DAQ trigger (10 Hz)
Trig 807	BPM Calibration Tone trigger
Trig 802	BPM SIS trigger

Selecting **TIMING DATA DISPLAY** shows the triggers on the display screen.

To activate or deactivate a trigger, first select the beam code for which you want to activate/deactivate the trigger on the SCP panel and then press (**DE-)ACTIVATE DEVICE** in the bottom left. To alter the timing of a trigger, select **ENTER TDES,** and enter a trigger offset in nanoseconds. You can also chose to assign a knob over in MCC and adjust it by hand.

2. Switching on/off and setting the steering feedback in ESA

Go to

SLC Index > FEEDBK System Index > SELECT MISC

Make sure that "**E158 AB01 Steer**" is selected. To turn the feedback on you have to press "**Change Loop HSTA**" at the bottom right. Set this to "**FEEDBK**" when you want the feedback on and "**COMPUTE"** when you want it off. The feedback in 'compute' means that it computes the magnet correction values but doesn't actually applies them. Note that the ESA feedback uses the trim coils on *AB01 XCOR 2892, YCOR 2913* (located in front of BPM 3115 (BPM 31) and

XCOR 3214, YCOR 3315 (located in between BPMs 3115 and 4160 (resp. 31 and 41 (1) in ESA lingo.)).

If you want to have a look to the data gathered for feedback steering, you can select "**Acquir Data**" which produces a plot with a yellow line which represents the setpoint value of the feedback in x,y position and angle and the measured values which represent the beam position. Also if you select "**Display Vector**", and "**Setpnt Display**" if shows up the values on the display screen.

To change the feedback setpoints go to

SLC Index > FEEDBK System Index > State Panel

from the top row of the feedback panel. Again, you need to make sure that you have selected "**E158 AB01 Steer**" (see above). Use for this screen is pretty straightforward, you have 4 buttons labelled "**AB01 X @ 55**" to "**AB01 YANG @ 55**" which correspond to the X,Y position and angle feedback setpoints. Select one of them and press the button next to "**Enter Values --->**". In the bottom row you'll find some display buttons as well.

3. Centering the trim - coils

The feedback system makes use of the trim coils mentioned in item 2. These however have a limited range (roughly from -0.5 to 0.5 kGm), so it can happen that they get to the end of their range at which point the feedback system is unable to make orbit corrections. So one has to keep these in the center of the range. There is typically a screen in MCC which shows the 4 trim magnet settings as a stripchart. We use the so-called bulk magnets to center the trim coils. If you change a bulk magnet with the feedback system on, it will try to compensate for the correction you have made with the trim coils, so careful adjustments can bring the trims to 0.

You usually want to make sure that the trims are well centered when doing a corrector scan.

Go to

SLC Index > A-Line Index > STEER PANEL

You'll find on the right hand side the magnets

XCOR AB01 A28	XCOR AB01 A32
XCOR AB01 A28 TRIM	XCOR AB01 A32 TRIM
YCOR AB01 A29	YCOR AB01 A33
YCOR AB01 A29 TRIM	YCOR AB01 A33 TRIM

So from there you can select the bulk magnets (not the trims !!) and assign them to steering knobs in MCC. Simply select a magnet and press "**ASSIGN KNOB x**". After that you can tweak the value of the magnet by turning the knob and see the feedback compensate your changes using the trim coils (see the traces).