Updates to ISI Master Models
MASTER Block Revision, Watchdog Display Update

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1 Summary

We have updated the BSC-ISI and HAM-ISI master models. These changes are present in revision XXXX of the isi/common/ directory in the cds_user_apps SVN and affects the files:
. . . /isi/common/models/isi2stagemaster.mdl and
. . . /isi/common/models/isihammaster.mdl.
and several of the MEDM screens in:
. . . /isi/common/medm/bscisi/ and . . . /isi/common/medm/hamisi/

We have updated the simulink models as follows:

1. Update the BSC Stage 1 and Stage 2 MASTER block and the HAM Master Block to remove the SIG filters in the watchdog path.

2. Change the name of the DQ channels recording the final drive outputs. They have changed from . . . _MASTER_*DOF*_**IN1**_DQ to . . . _MASTER_*DOF*_**DRIVE**_DQ.

3. Update the names of the internal model signals going to the stage 1 and stage 2 Watchdogs to remove the ITMX at the beginning of the names.

We have updated the MEDM screens as follows:

4. The SIG block on the Overview screen has been removed, since the SIG filters in the MASTER blocks have been removed.

5. Additional indicators have been added to the Overview screen so the watchdog state and watchdog signal flow more obvious to the operators.

6. The small watchdog screen has been removed - clicking the watchdog box on the overview screen now opens the main watchdog screen.

2 Update to the Master Block

The Master block contains the is the final switching of the actuator drives. This is where the 'Master Switch' can turn off the ISI drives, and also where the Watchdog can turn off the ISI drives. In this block, two filter banks per channel have be eliminated because the RCG no longer needs them. The change is shown in figure 1. The first filter bank (e.g. H1) allowed us watch and record the final signal. This has been replaced by an epics var and a test point. The second filter bank (e.g. H1SIG) was originally used to allow us to name the signal so we could pass it to the watchdog. The RCG now allows direct naming of the signal from the bus so the filter bank is no longer needed. The filter bank can introduce errors by disconnecting or modifying the signal passed to the Watchdog, so we are taking it out. As an additional benefit, this eliminates 31*6 = 186 epics variables and 7*6 = 42 test points per stage.

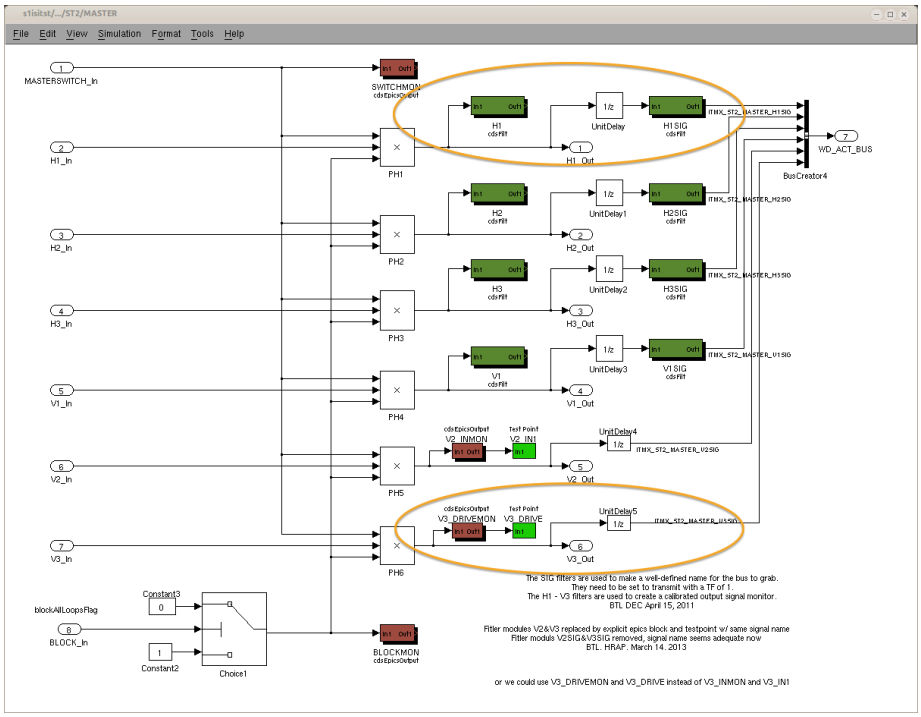

Figure 1: Snapshot of the Stage 2 MASTER block, illustrating the change. The top orange oval shows the old way, and the bottom shows the new way. For each actuator path, 2 filter blocks per path have been removed and replaced by 1 epics variable and 1 test point.

The final Masterblocks are shown below in figures 2, 3, and 4.

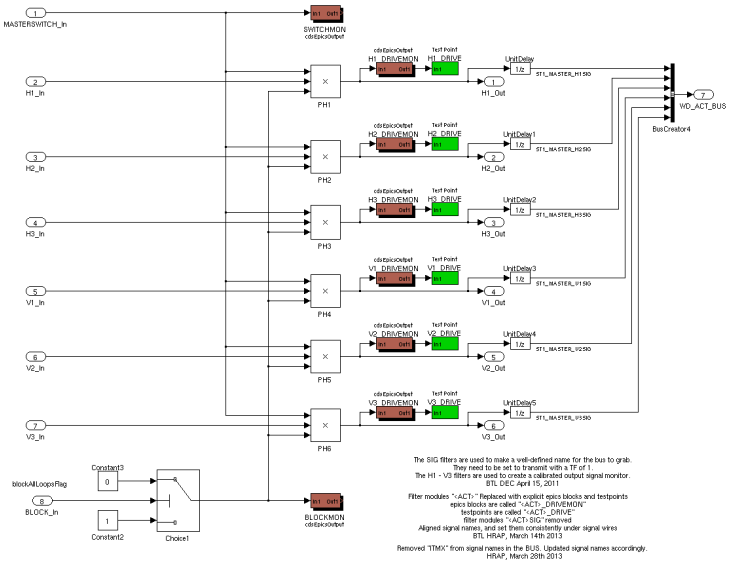

Figure 2: New BSC-ISI Stage 1 Masterblock.

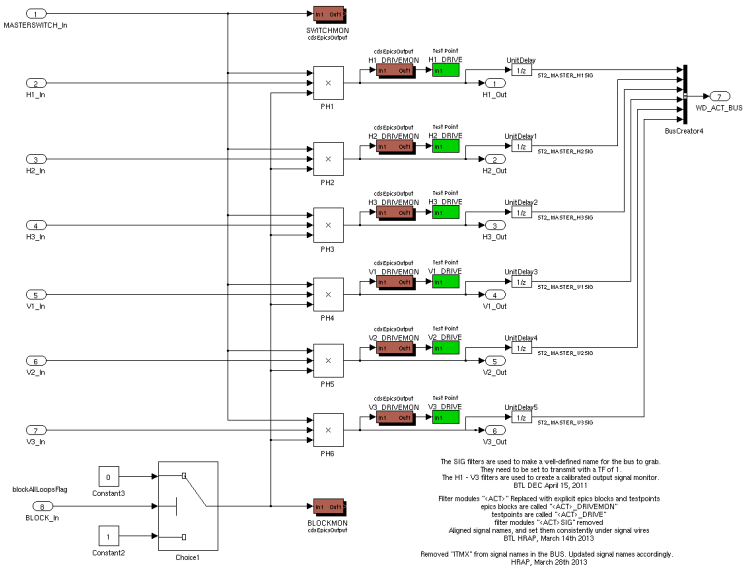

Figure 3: New BSC-ISI Stage 2 Masterblock.

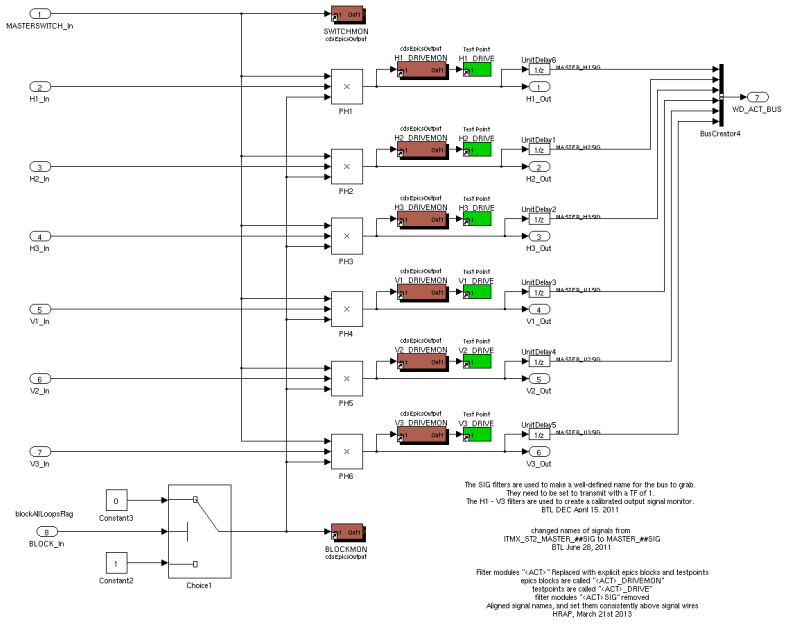

Figure 4: New HAM-ISI Masterblock.

3 Change the Actuator Signal Names

We have CHANGED the SIGNAL NAMES for the actuator drives which are recording the framebuilder. Because we have replaced the first set of filter banks with a testpoint and an epics variable, we can give the final drive signal a more descriptive name that "IN1" and "INMON". This may cause some reverse compatibility issues. The signals for the BSC-ISI were defined as:

{ifo}:ISI-{chamber}_{stage}_MASTER_{dof}_IN1, _IN1_DAQ, and _INMON, e.g.
S1:ISI-ITMX_ST2_MASTER_V3_IN1 (the 4096 test point)
S1:ISI-ITMX_ST2_MASTER_V3_IN1_DQ, (the 512 frame builder channel)
S1:ISI-ITMX_ST2_MASTER_V3_INMON (the epics monitor)

Since it is no longer a filter module, we have taken the opportunity to update the name to something more clear, i.e.
{ifo}:ISI-{chamber}_{stage}_MASTER_{dof}_DRIVE, _DRIVE_DAQ, and _DRIVEMON, e.g.
S1:ISI-ITMX_ST2_MASTER_V3_DRIVE
S1:ISI-ITMX_ST2_MASTER_V3_DRIVE_DQ,
S1:ISI-ITMX_ST2_MASTER_V3_DRIVEMON

Similarly, the signals for the HAM-ISIs were: {ifo}:ISI-{chamber}_MASTER_{dof}_IN1, _IN1_DAQ, and _INMON, e.g.
S1:ISI-HAMX_MASTER_V3_IN1 (the 4096 test point)
S1:ISI-HAMX_MASTER_V3_IN1_DQ, (the 512 frame builder channel)
S1:ISI-HAMX_MASTER_V3_INMON (the epics monitor)

and now they are:
{ifo}:ISI-{chamber}_MASTER_{dof}_DRIVE, _DRIVE_DAQ, and _DRIVEMON, e.g.
S1:ISI-HAMX_MASTER_V3_DRIVE
S1:ISI-HAMX_MASTER_V3_DRIVE_DQ,
S1:ISI-HAMX_MASTER_V3_DRIVEMON

The advantage is that the name makes sense, the disadvantage is that stuff looking at these names will have to change. There are a few MEDM signals that watch this:

- Watchdog screen drive mon
- plotting scripts for the trip plotter
- DAC monitor

4 Internal Channel names on the Watchdog busses

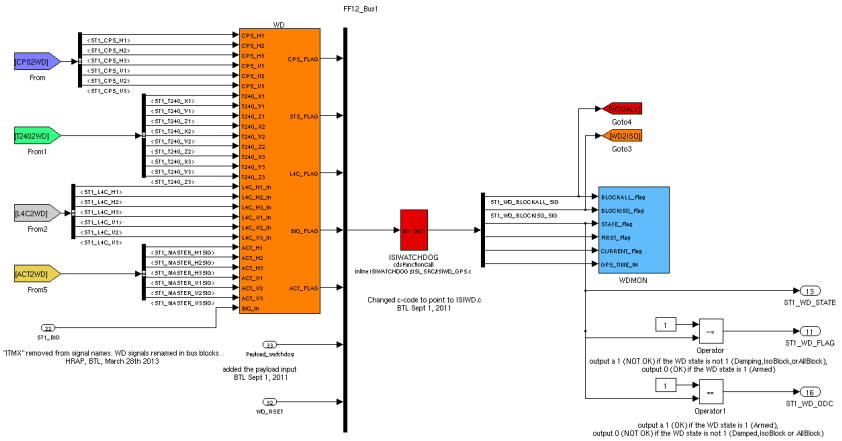

Figure 5: Screenshot of the inputs to the BSC-ISI Stage 1 Watchdogs. The names of the input channels (e.g. ST1_L4C_H1) are no longer specific to a particular chamber. The original names are shown below in figure 6.

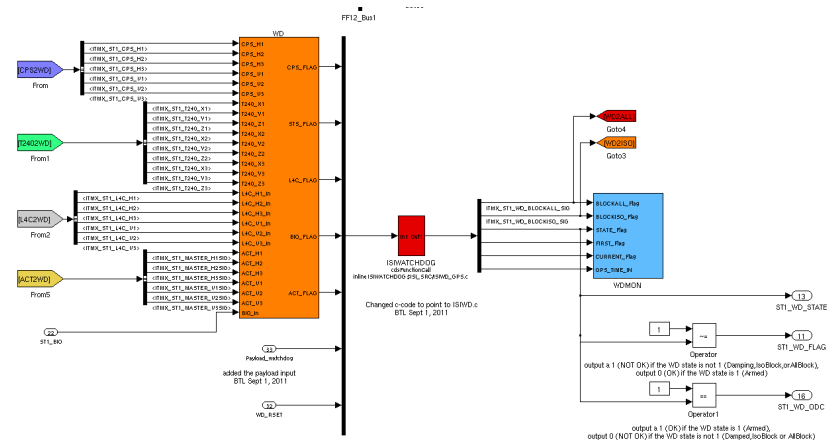

Figure 6: Screenshot of the ORIGINAL inputs to the BSC-ISI Stage 1 Watchdogs. Here, the names of the input channels (e.g. ITMX_ST1_GS13_H1) refer to the Stanford development platform.

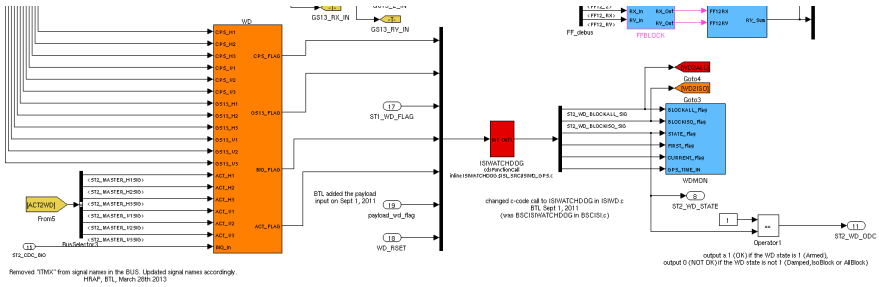

Figure 7: Screenshot of the inputs to the BSC-ISI Stage 2 Watchdogs. The names of the input channels (e.g. ST1_GS13_H1) are no longer specific to a particular chamber.

5 MEDM updates

5.1 MEDM SIG block removal

The SIG filters have been removed from the MASTER blocks, so the SIG display on the overview screen has been removed.

5.2 Additional Watchdog indicators on the overview screens

The MEDM screens have been updated to clearly show which paths the Watchdog is allowing, and which paths the Watchdog is blocking. Hugo Paris has assembled a set of slides showing the change, LIGO-G1300XXX.

5.3 Small Watchdog screen removed

Clicking on the Watchdog state indicator on the Overview screen now takes you directly to the full Watchdog status screen, rather than the Watchdog summary screen. It seemed that almost no one used the Watchdog summary, so it was removed.