LABORATORY TESTING INC.
www.labtesting.com
FRACTURE TECHNOLOGY
800-219-9095
Fax: 800-219-9096
2331 Topaz Drive, Hatfield, PA 19440

MTS FlexTest FTA Configuration – Rev1 | November 1, 2021

1. MTS FlexTest Hardware Boards

The FTA system requires MTS analog input and output hardware boards:

1. 494.45 8-Input A/D card w/ BNC Connectors
2. 494.46 8-Input D/A card w/ BNC Connectors

These boards must be purchased and installed via MTS, as the standard MTS FlexTest controller configuration does not provide filtered A/D inputs or D/A outputs.

2. MTS Station Builder

With the appropriate I/O boards installed in the MTS controller, the controller needs to be configured to receive the External Command from the ADwin, which is connected to OUT1 of the ADwin. This is configured under **Channels** and then **Inputs** in Station Builder. See Fig. 1.

The resource shall be something like 494.45 A/D 1 S3-J1A, depending on which channel it is connected to. The designated channel is indicated by the number directly following 'A/D'.

Dimensions is set to **Volts** and **Display Units** to V.

It is recommended to set the **Display Name** and **Internal Name** to 'External Command'.

If performing Fatigue Crack Growth (FCGR) and Nonlinear Fracture Toughness (NLFT), the ADwin needs three D/A Readouts to be configured on the 494.46 D/A output card:

1. Force from Load Cell connected to ADwin IN1
2. Stroke (LVDT) connected to ADwin IN2, and
3. COD Gage connected to ADwin IN3

These are defined in **Station Builder** under **Readouts**. The assigned resources will be something like 494.46 D/A 1 S3-J1A, etc., with the same syntax as the External Command output discussed above.

See Fig. 2 showing the Force Readout as an example.

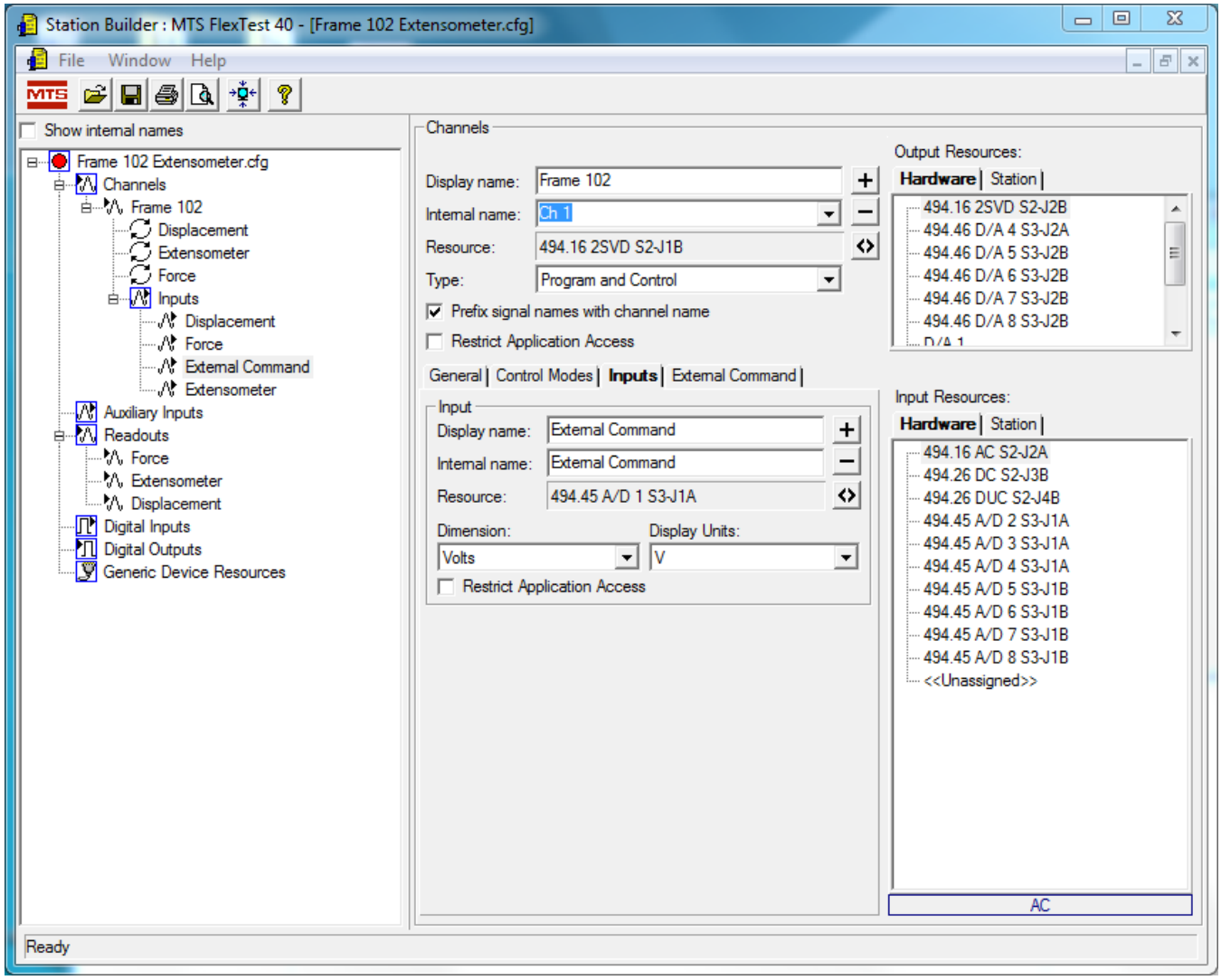

Figure 1: Example configuration of the External Command for FTA under MTS Station Builder

Once the Station Builder is configured, save the configuration with an appropriate name (like FTA Configuration). In this way if the customer wants to use his system without the FTA package for something else, the software can be updated to use a different configuration. To save the configuration, go to “File”, then “Save As”, and provide an appropriate name.

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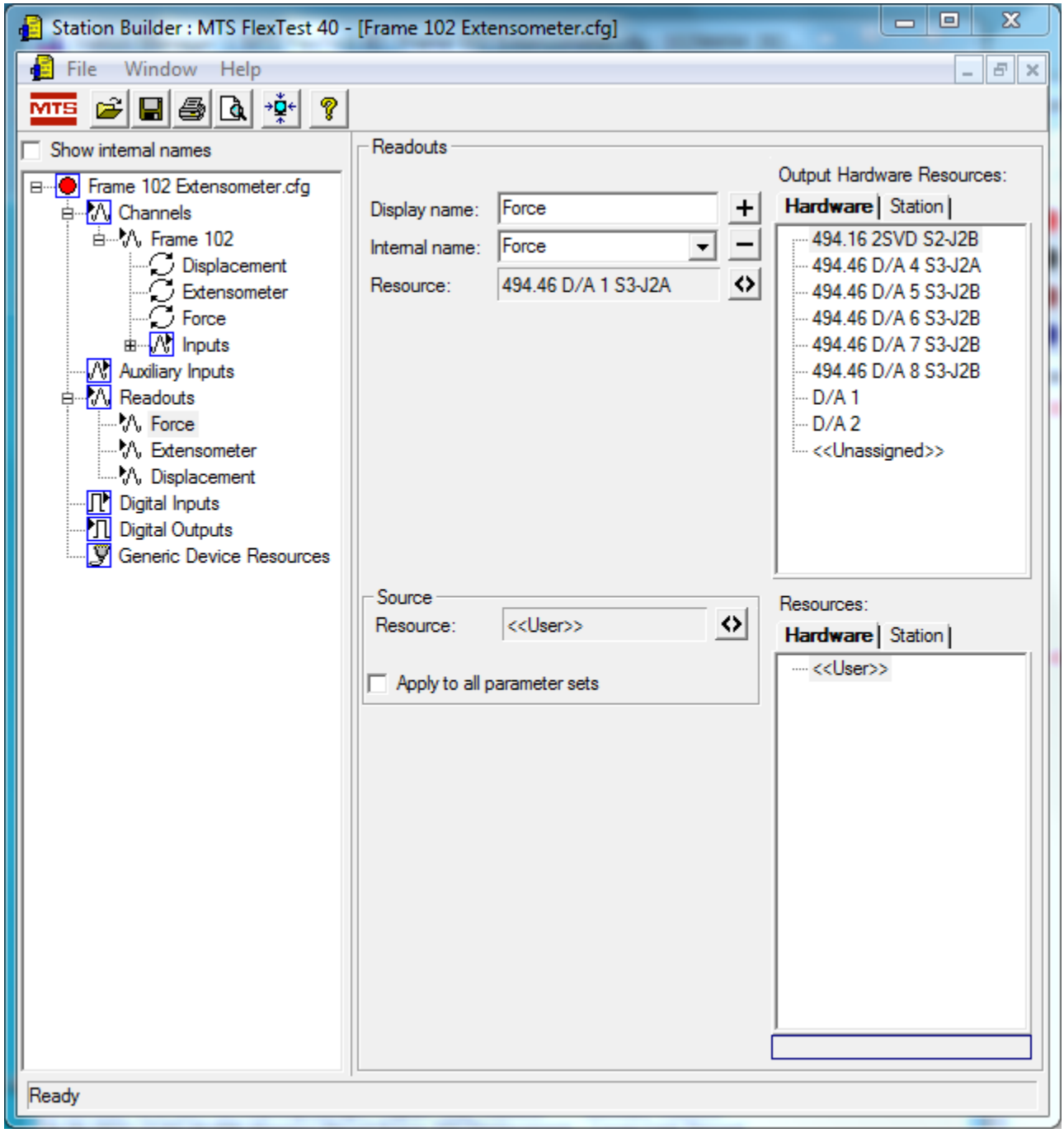

Figure 2: Example Force Readout configuration.

All of the ADwin inputs/outputs are to be configured as +/- 10 VDC, with the following connections:

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Note that if the FTA DCPD system is utilized, it must be connected to IN5 (Active) or IN6 (Reference) on the ADwin. The DCPD signals do not go through the MTS Controller so they do not need to be defined as Readouts in MTS Station Builder.

3. MTS Station Manager

The External Command must be setup under Station Setup. Go to **Station Setup** and configure the External Command Input. See Fig. 3.

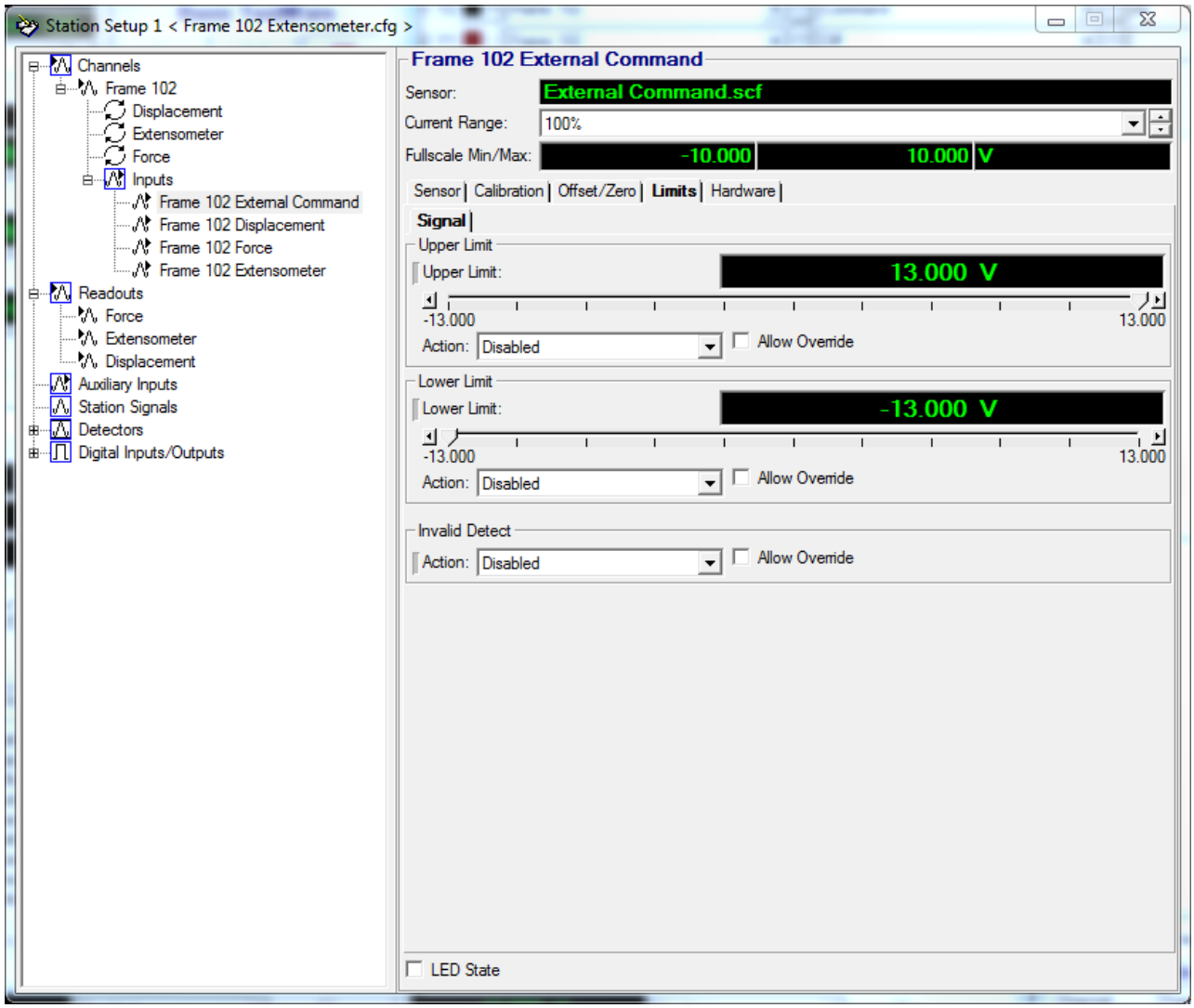

Figure 3: Example configuration of the External Command for FTA under MTS Station Manager.

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4. Controller System Sampling Rate

The sampling rate for the FlexTest 40 controller is set in the HWI file. The default from the factory is 1,024 Hz but it can be set up to a maximum of 6,144 Hz with options of 1,024 Hz, 2,0248 Hz, 4,096Hz, and 6,144Hz. It is recommended that the sampling rate be increased to 6,114Hz, to allow FTA to have the best possible control. This is accomplished in the HWI Editor on the 94.42 System Board Properties tab by changing the System Rate to 6144. See Fig. 4. After updating the HWI file, run the **System Loader** once the HWI file is changed. If not, the system update rate will not be saved!

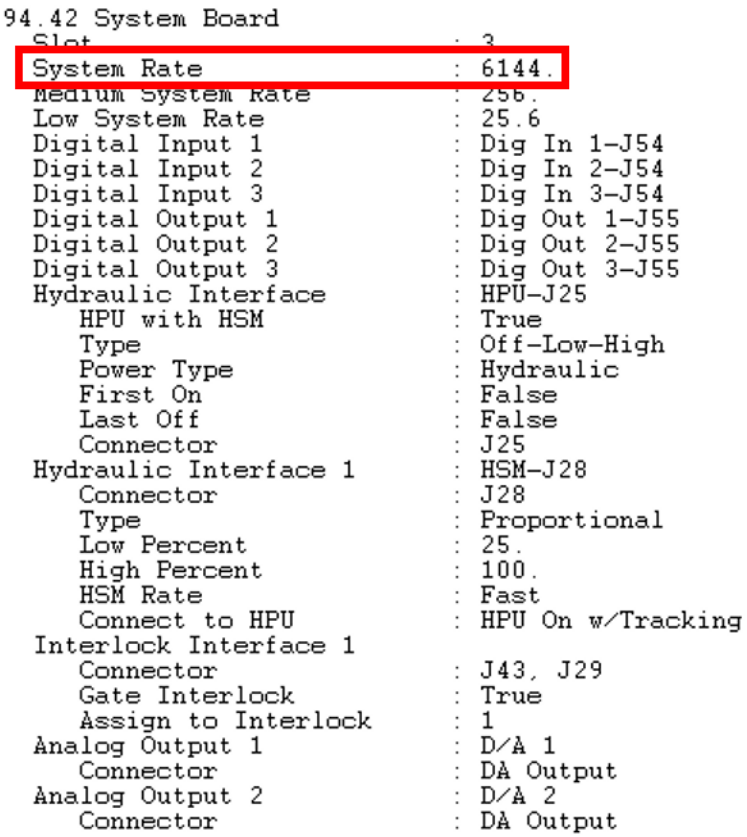

Figure 4: System Rate shown at 6144Hz in the HWI Editor.