COMTRADE replay (read)

<p style="text-align:center">read1</p>

<p style="text-align:center">◀ COMTRADE</p>

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1 Introduction

This device reads a COMTRADE data file, accordingly to the specifications in the configuration file (CFG) and put the read values in the control signals (analog and logical) included in its Bundles. The signals have same names as the channel identifiers.

The data file can be written into a binary file or a text one depending on the format (BINARY, BINARY32, ASCII or ASCII). The configuration file is always a text file with critical information that allows to read the data file correctly.

In figure 1, the example shows a COMTRADE replay reading the data file that is specified and putting the results of the signal named input1 in the scope scp2.
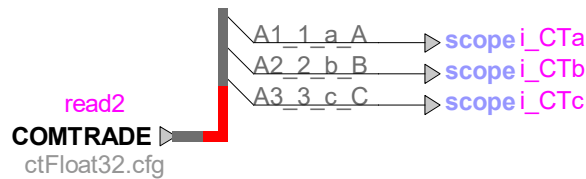

Figure 1-1: Example, COMTRADE replay

2 Parameters

- **Select CFG file:** this button allows to specify the COMTRADE configuration file.
- **Select DAT file:** this button allows to specify the COMTRADE data file.
- **Version:** it is the standard used to write the files.
- **Number of sample rates:** specify the number of sampling frequency used during the recording. If this value is zero, it means the sample time is obtained by reading the data file.
- **Sample rates:** gives all the sampling frequencies. The reverse of the sampling frequency gives the sampling period. The sampling period should always be bigger than the time-step of the simulation to have better result but if it is not the case, the simulation still read the data file (with some values missing and EMTP shows a warning).

- **Number of the last sample of each sample rate:** it allows to know when the sampling period changes during the simulation, and also when the reading should stop (end of file).
- **Format file:** specifies the format of the data file. ASCII means text file, BINARY means binary file with analog signals written into 2 bytes integers and BINARY32 and FLOAT32 means binary file with analog signals recorded into 4 bytes integers or reals.
- **Time multiplicator:** a multiplication factor for the times of the sampling in the data file. The real time of a sampling (in micro seconds) is the Sampling time multiplied by the time multiplicator.
- **Analog signals:** the table specifies each analog signal's **name**, **unit**, **factor_a** and **factor_b**. The range of 2 bytes binary numbers is between -32767 and 32767. So knowing the max and min values, we calculate two factors (**factor_a** for the range and **factor_b** for the offset) so that if x is the value written in the data file, the original value is restored doing ax + b.
- **Digital signals:** the table gives the names of the logical signals.

3 Pins

The COMTRADE replay has one bundle control output which contains the values read from the data file. The breakouts of this bundle are the signals' names (analog and logical) from configuration file. So the total number of breakouts is given by the total number signals specified in the configuration file.

4 Example of data file

4.1 ASCII format:

Each line of the data file represents a sample and below is represented one in ASCII format:

5, 667, –760, 1274, 72, 61, –140, –502,0,0,0,0,1,1

Where the first element is the sample number, the second one is the sample time (in micro seconds), and the then comes the analog values followed by the digital (or logical) values. In this example, we have 6 analog signals and 6 digital signals. All values are separated by commas.

4.2 BINARY format:

Each line of the data file represents a sample and below is represented one in BINARY format:

05 00 00 00 9B 02 00 00 08 FD FA 04 48 00 3D 00 74 FF 0A FE 30 00

The elements are the same than in the ASCII format, In fact, this line is the same sample than the one given in 4.1 as an example. In BINARY format, there is no comma. The sample number and the sample time are written into 4 bytes integers, the analog signals into 2 bytes integers (or 4 bytes if the format is BINARY32 or FLOAT32) and the digital signals are written by group of sixteen (padded with zeros) into 2 bytes integers. To be able to read it correctly, it is mandatory to respect these specifications or the values would be incoherent.