



Drive Diagnostics

Application Note 157

This application note describes the logging and error recording features of Triamec servo drives. The means to use and analyze these features are presented and discussed.

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1 Introduction

Triamec servo drives feature a powerful logging and error recording system that can be used for diagnostics purposes, e.g. in the event of axis and drive errors or machine failure. This document provides instructions and an overview of the mechanisms, file types and their usage with the *TAM System Explorer*.

2 Dump Events

The *Dump Event* is the primary mechanism in drive diagnostics and is triggered when the drive registers an error. The *Dump Event* mechanism creates files for investigating the cause of errors with the *TAM System Explorer*.

The Dump Event triggers the creation of the following file types:

1. TAM Snapshot (**.TAMsnap**)
2. TAM Time Dump (**.TAMdmp**)

and appends a new event/message to the

3. Dump Logfile (dump/**log.txt**)
4. Standard Logfile (**log.txt**)

In total, the drive can hold up to eight dump events in its memory. At the beginning of a Triamec drive's life, each time an error occurs, a new set of files is created with an increasing event number. When the ninth event occurs, the corresponding files are written to the first event and the previous first event is therefore overwritten.

2.1 Trigger Sources

A dump event can have a number of different sources, including axis errors, device errors, or manual triggers. Table 1 shows which files are generated depending on the source.

Table 1: Diagnostics file creation trigger matrix

Source of Error	TAM Time Dump Axis 0	TAM Time Dump Axis 1	TAM Snapshot
Axis 0	x		x
Axis 1		x	x
Device	x	x	x
Manual Trigger	x	x	x

To trigger a *Dump Event* manually, click the camera icon in the lower left corner of *TAM System Explorer* as depicted in Figure 1. Alternatively, you can also press F7.



Figure 1: Trigger a dump event by clicking the camera symbol

2.2 TAM Snapshot

A **TAM Snapshot** (*.TAMsnap*) represents the state of the entire drive at a specific time instance. In our case, this is the time when the *Dump Event* was triggered. The state is represented by the current register values.

For more information about the *TAM Snapshot* see Chapter 3.6 in [2].

2.3 TAM Time Dump

A **TAM Time Dump** (*.TAMdmp*) is a file containing the values of a small set of important registers recorded up to the time of the *Dump Event*. Such a file can provide vital information as to why an error has occurred.

TAM Time Dumps are always created in a pair of 10kHz and 100kHz sampled versions, each with space for a total of 256kB of data. The latter provides more resolution at the cost of a short recording. The other provides a longer recording at the cost of a less detailed resolution.

2.4 Standard Logfile

The **Standard Logfile** (*log.txt*) is not exclusive to the Dump Events, since it keeps record of all messages including notes, warnings and errors.

It has a table structure with one row for a specific message and the columns are as follows:

- Timestamp
- Source
- Severity
- Message-ID (for interpretation see [1])
- Message-Text

Note: More Information regarding the Logfile and the Messages can be seen in [1].

2.5 Dump Logfile

In addition to *.TAMdmp* and the *.TAMSnap*, there is the **Dump Logfile** (*dump/log.txt*). Each time a *Dump Event* is triggered, a line is appended. This means that this file can be viewed as a table of contents for past *Dump Events*.

Note: All files explained above, except the normal *log.txt*, are stored on a permanent memory region on the drive. In the case of a power interruption or restart, the files are restored.

3 Report

The Report is a .zip archive generated via *TAM System Explorer*. It contains diagnostics files of Triamec drives. A report is structured as follows:

- **Drive-generated files:** A sub-directory for each drive visible in the *TAM System Explorer*.
- **Workspace files:** A sub-directory for *TAM System Explorer* workspace log files.
- **Current.TAMcfg:** A TAMcfg file of all drives currently visible in the *TAM System Explorer* (for detailed information about this file, see Chapter 3.5 in [2])

Since we are only interested in internal drive errors, we cover the details of the drive-generated files in this chapter.

3.1 Generate a Report

A Report can be generated by clicking the envelope symbol depicted in Figure 2, in the bottom-left corner of the *TAM System Explorer*. After that, it will ask you where you want to store the archive.



Figure 2: Generate a report by clicking the envelope

Note: Instead of generating an entire Report, those files can alternatively also be accessed individually via the drive browser. More information about the drives file system and access to the browser can be found in [3].

3.2 Analyzing the drive-generated Files

The following files are part of the drive-generated files subdirectory of the report.

Logfiles

The *log.txt* as well as the *dump/log.txt* can be opened with any conventional text viewer.

TAM Time Dump

A TAM Time Dump can be opened and loaded into a scope via the context menu **Scope > Load Plot Data...** shown in Figure 3.

The window with the signals uses the standard scope of the *TAM System Explorer*. For more information about the usage of the scope, see Chapter 3.3 in [2].

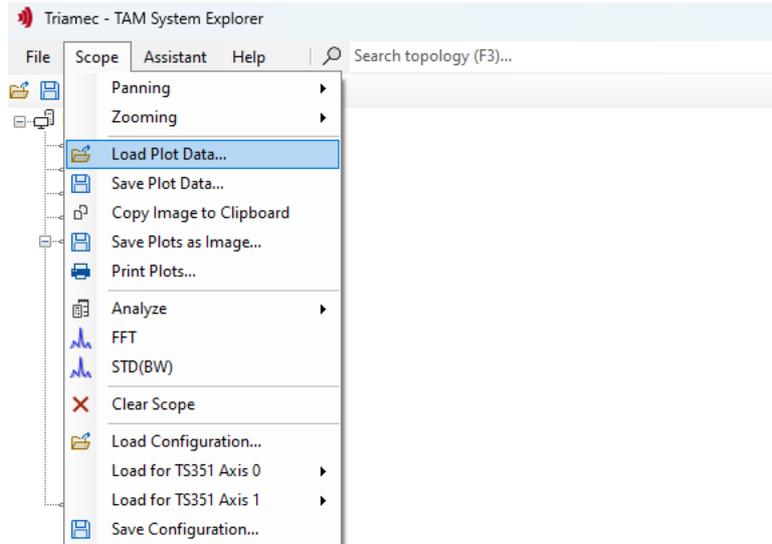


Figure 3: Open TAM Time Dump files

Note: Since TAM Time Dump files are always in pairs (10kHz and 100kHz version) can also be opened together by selecting both files corresponding to the same event.

TAM Snapshot

To open a TAM Snapshot, navigate to the context menu **File > Open Offline > Device Snapshot...** shown in Figure 4. This will open a new Window of the *TAM System Explorer* with the a simulated instance of the drive showing all the registers and its values at the time of the *Dump Event*.

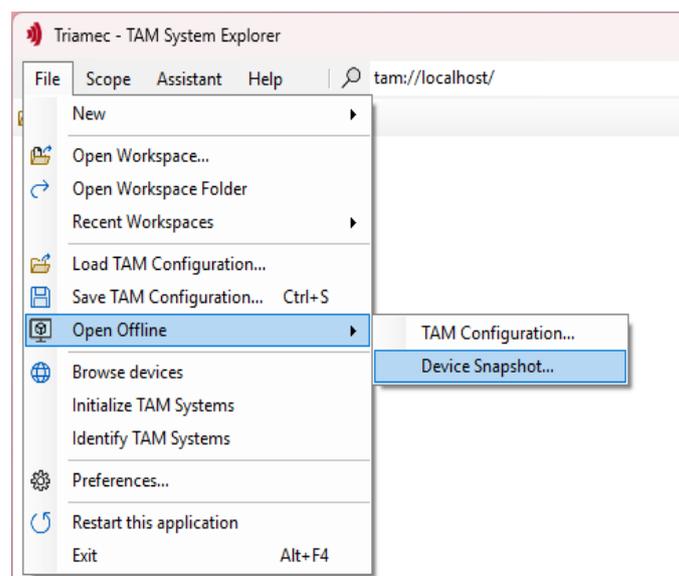


Figure 4: Open a TAM Snapshot



References

- [1] "Drive Messages", AN102_DriveMessages_EP007.pdf, Triamec Motion AG, 2024
- [2] "Servo Drive - Setup Guide", ServoDrive-SetupGuide_EP028.pdf, Triamec Motion AG, 2024
- [3] "Filesystem", AN124_Filesystem_EP010.pdf, Triamec Motion AG, 2024

Revision History

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001	2025-03-06	es	Initial edit

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