

## File Name and Location

The Disturbance Log file is a text file located in the “Running” Directory of the InTekOPC Server. The file is named according to the following convention:

Disturbance-DevName-FaultNumber-YYYYMMDD.log

Where *DevName* is the Device Name and *FaultNumber* is the given Fault Number. So if, for example, Device “SJ62Dev01” is reporting a disturbance with Fault Number 2 on Juli 10 2003, the disturbance log file will named:

Disturbance-SJ62Dev01-003-20030710.log

Each file contain only the values related to a specific disturbance on the specific Device.

## Generation of Disturbance Log

Following the IEC 60870-5-103 convention the log file is generated when the device send an ASDU 26 (List of disturbances) and from there the status and the channel values are extracted accordingly.

During the collection of the disturbance data the data updates may be locked up because of the disturbance information consist of many data which take some time to be retrieved. Because of this, the generation of Disturbance Log is OFF by default.

To enable the log Disturbance click on the “Log Disturbance” option on the Device Properties dialog. (See the shown picture.)

The screenshot shows the 'IEC 870-103 Device Properties' dialog box. The 'Log Disturbance' checkbox is checked and circled in red. The dialog contains the following fields and settings:

- Name: Dev7UT51
- Description: (empty)
- Type - Protocol: IEC 60870-5-103 Siprotec 7UT51xx
- Disable:
- Parameter:
  - Address: 1
  - Channel: Channel12
  - Function: 160
  - Log Disturbance:
- Time (in Millisecond):
  - Inter-Poll Delay: 1000
  - Recv Timeout: 1000
  - Send Timeout: 1000
- Counter:
  - Skip Count If Down: 3
  - Data Refresh Count: 20
  - Retry Count: 3
- Timer (in Millisecond):
  - Time Sync. Timer: 36000

## Content of Disturbance Log

The Disturbance Log contain a partially interpreted data from the Device. The content of the file is as follow:

Starts with a “Disturbance Header Block”:

\*\*\*\*\* Disturbance ### \*\*\*\*\*

TimeStamp: hh:mm:ss.uuuu YYYY-MM-DD

Status: TP[#]TM[#]TEST[#]OTEV[#]

Type: [1] -- Grid Fault#: # -- No. Of Channel: # -- Element per Channel: ### -- Interval: ### microseconds.

Time of First Data: hh:mm:ss:uuuu

Where # represents numbers, and hh:mm:ss.uuuu represents a time stamp, while YYYY-MM-DD represents a date.

And following that header is the “Tag Status Block”

\*\*\*\* Start of Tags Dump \*\*\*\*

[0] TagName1 = ON

[1] TagName2 = OFF

[2] ...

...

Where **TagName** is replaced with a known Tag Name, if the Tag Name is not registered it will be named as Tag(FUN=##, INF=##) , the value is either “ON”, “OFF” or “?”. This Tag Status Block may be repeated. The first one indicates the status of the tags BEFORE the disturbance occur, the next block indicates the status DURING the disturbance

At the end of the block is the following marker:

\*\*\*\* End of Tags Dump \*\*\*\*

Which is then followed by the “Channel Waveform Capture Block” which started by:

\*\*\*\* Start of Channel # Dump Raw Value x 32768 \*\*\*\*

TOV: # -- Channel#: # -- RPV: ### -- RSV: ### -- RFA: ###

Where ### indicates a number. **RPV**, **RSV** and **RFA** are defined in the IEC-60870-5-103 as follow:

**RPV**: Rated Primary Value

**RSV**: Rated Secondary Value

**RFA**: Reference Factor

Following this header is list of values of the snapshot of the waveform on the respected channel, the snapshot is taken started at some given time (specified as “Time of first data” in the “Disturbance Header Block”). This starting time is always earlier than the Disturbance Time.

The snapshot is created by sampling the waveform at a given periode (specified as “Interval” in the “Disturbance Header Block”).

The Values listed in this block is formatted as follow:

Index\_1, value\_1  
Index\_2, value\_2  
...

Where **index** is and index and **value** is a Raw Value. The number is repeated as many as specified in “Element Per Channel” parameter of the “Disturbance Header Block”. This Raw Value is already multiplied by 32768 to minimize rounding error. By Copying and Pasting this values into an excel worksheet a Waveform graph can be generated, using **index** as the X values and **value** as Y values.

This Block is ended by:

\*\*\*\* End of Channel Data Dump \*\*\*\*

This “Channel Waveform Capture Block” is repeated as many times as specified by the number of channel in the “Disturbance Header Block”.

At the end of the file the following marker should be found.

\*\*\*\* End of Disturbance Data Dump \*\*\*\*