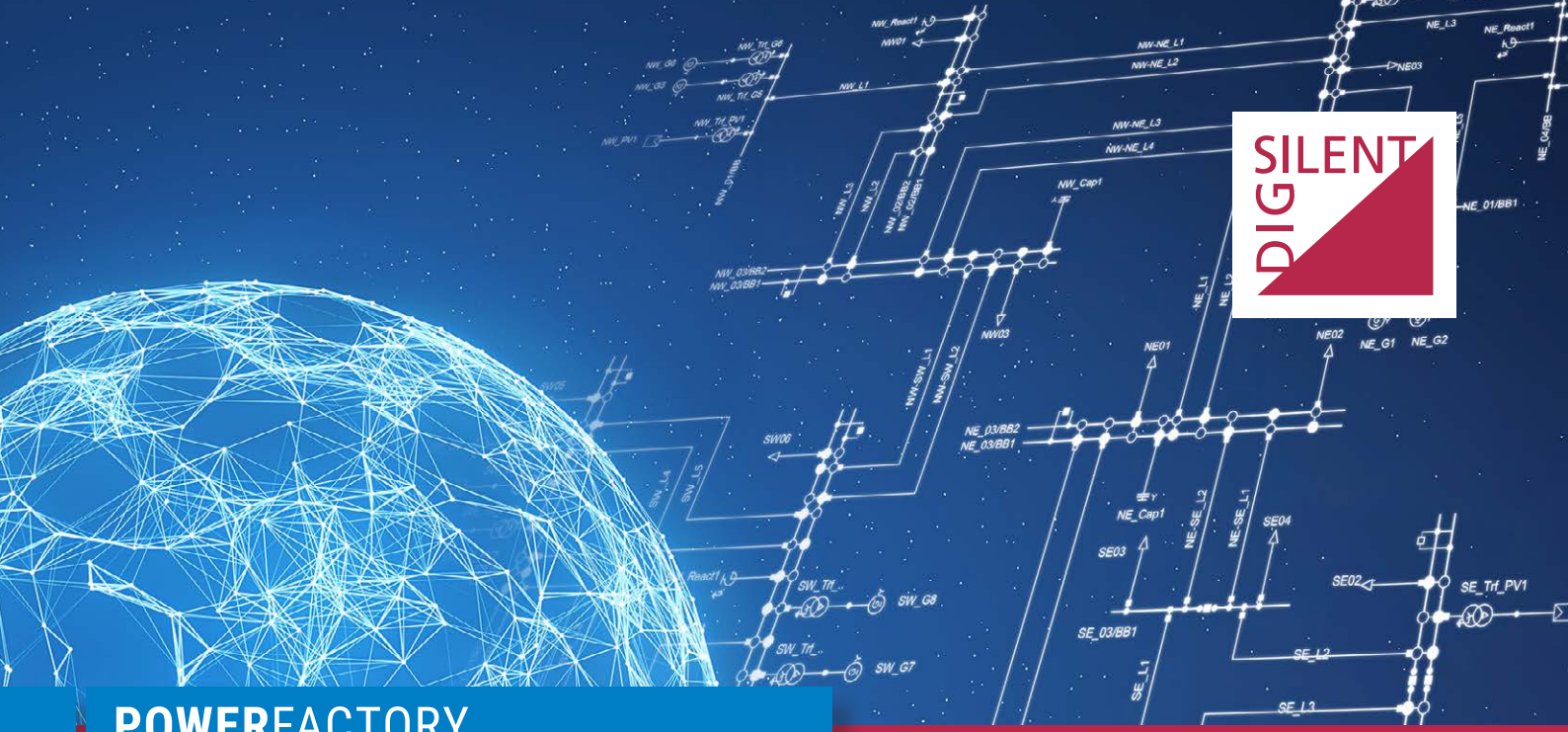

POWERFACTORY

PowerFactory 2021

Technical Reference

C37 Configuration

ElmC37, TypC37

PF2021

POWER SYSTEM SOLUTIONS

MADE IN GERMANY

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Revision 1

Contents

1 General Description

This document describes the functionality for using signals from the c37 standard as input. Therefore it contains information on several PowerFactory objects which are used for starting measurements, reading data from the stream and writing comtrade files.

1.1 Object Overview

The following objects are required or useful for projects reading data from the C37.118-2005 stream.

- **C37 Configuration Element (ElmC37)**
  Element which translates the C37.118-2005 data stream to PowerFactory signals.
- **C37 Configuration Type (TypC37)**
  Type used by ElmC37
- **Start Measurement command (ComMeasure)**
  Command for starting the measurements.
- **Result file (ElmRes)**
  PowerFactory result file. Used in measurements for creating the COMTRADE files.

2 Objects

2.1 ElmC37

2.1.1 Dialogue

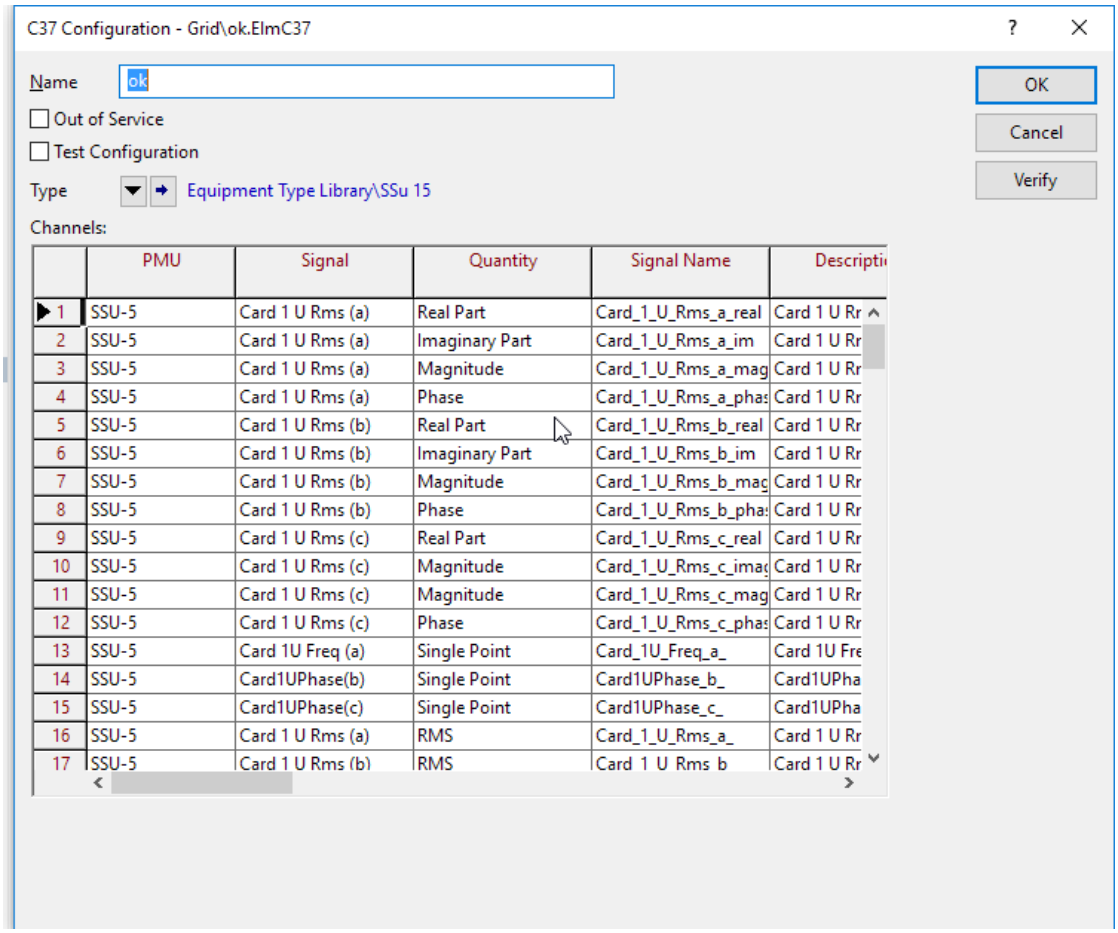

Figure 2.1: C37 Configuration Element - Dialogue Box

2.1.2 Settings

Table 2.1: *ElmC37* Parameter

Index	Parameter	Unit	Description	Detailed Explanation
01	loc_name		Name	Unique name in folder
02	outserv		Out of service	Indicating if element is active
03	testConfig		Test configuration	If enabled: test configuration mode
04	typ_id		Type	C37 type
05	pmu		PMU	PMU name in C37 configuration frame
06	signal		Signal	Signal name in C37 configuration frame
07	type		Quantity	Physical quantity, see below
08	name		Signal Name	Signal name (PowerFactory): U_Rms_a $\rightarrow$ s:U_Rms_a
09	desc		Description	Signal description in PowerFactory
10	unit		Unit	Unit in PowerFactory

2.1.3 Buttons

- **OK:**
  Close dialogue after saving all changes
- **Cancel:**
  Close dialogue, discard changes address, port and Id Code. All signals found are automatically added to the table.
- **Verify:**
  Verify if all signals in table are available from the C37 output connected to IP address, port and Id Code given in the type.
  The first non-existing signal is listed in an error message. The message “All signals were found.” is reported on success.

2.2 ElmC37 Configuration View

The ElmC37 Test Configuration is used to read the signals from COMTRADE files as an offline simulation input instead of using the C37.118-2005 protocol as an online simulation input. The simulation time period matches the time period of the data stored inside the corresponding COMTRADE file. The measurement command is used in the same way like for the input from the protocol. This allows to test simulation models with clearly defined input signals.

2.2.1 Dialogue

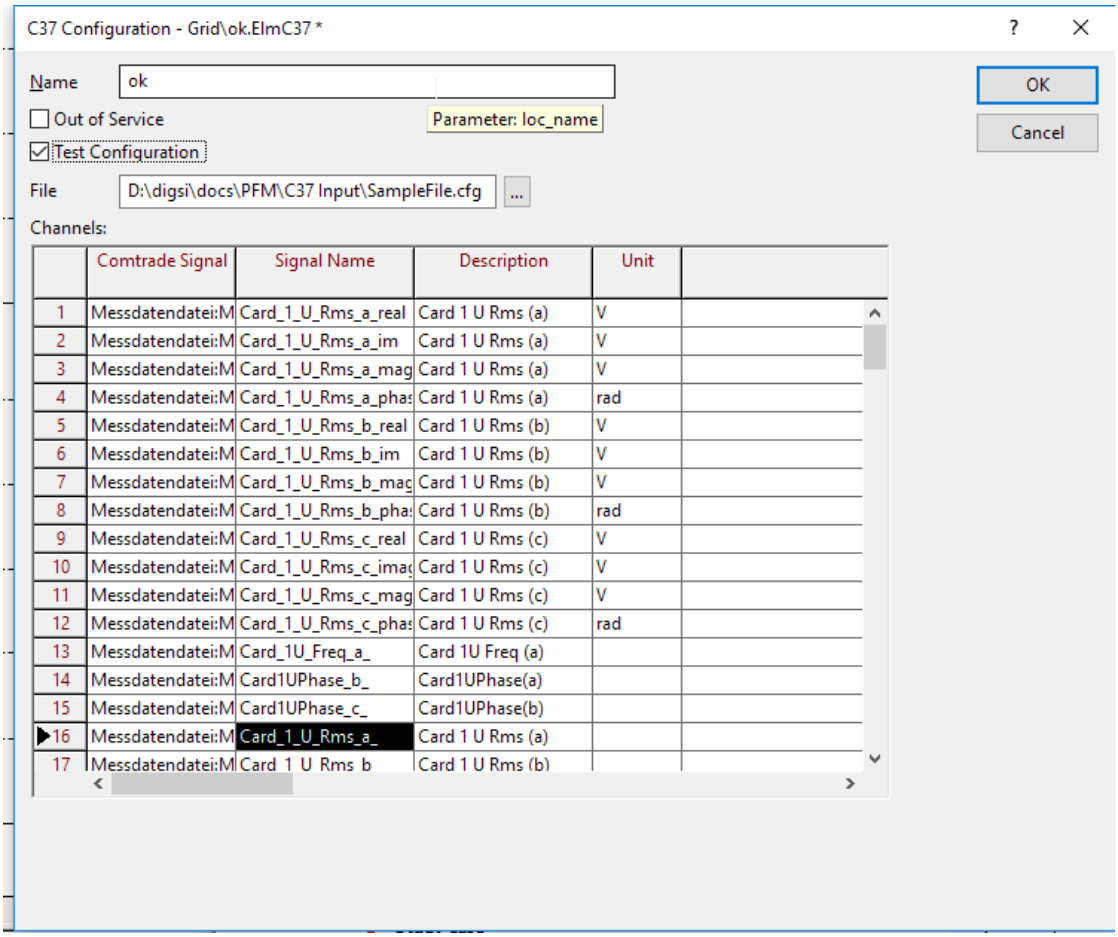

Figure 2.2: C37 Configuration Element Dialogue Box Configuration View

2.2.2 Settings

Table 2.2: *ElmC37* Parameter

Index	Parameter	Unit	Description	Detailed Explanation
01	loc_name		Name	Unique name in folder
02	outserv		Out of service	Indicating if element is active
03	testConfig		Test configuration	If enabled: test configuration mode
04	ctdfile		File	Comtrade configuration file path
05	ctdsignal		Comtrade Signal	Name in comtrade configuration file
08	name		Signal Name	Signal name (PowerFactory): U_Rms_a → s:U_Rms_a
09	desc		Description	Signal description in PowerFactory
10	unit		Unit	Unit in PowerFactory

2.3 TypC37

2.3.1 Dialogue

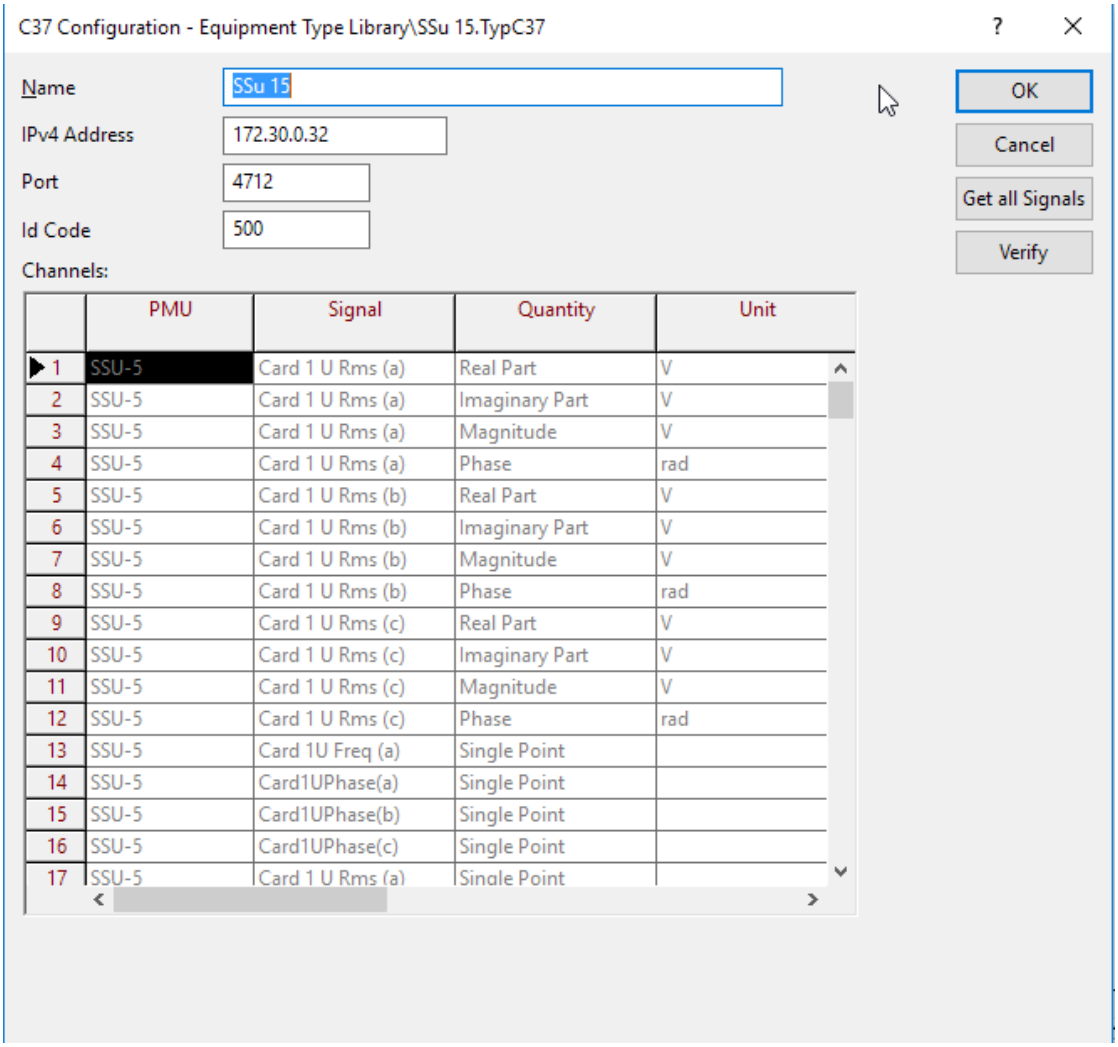

Figure 2.3: C37 Configuration Type - Dialogue Box

2.3.2 Settings

Table 2.3: *TypC37* Parameter

Index	Parameter	Unit	Description	Detailed Explanation
01	loc_name		Name	Unique name in folder
02	paddress		IPv4 Address	Internet Protocol Address
03	port		Poert	Corresponding port
04	idCode		Id Code	Id Code, see standard
05	pmu		PMU	PMU name in C37 configuration frame
06	signal		Signal	Signal name in C37 configuration frame
07	type		Quantity	Physical quantity, see below
10	unit		Unit	Unit in C37 configuration frame

2.3.3 Buttons

- **OK:**
  Close dialogue after saving all changes
- **Cancel:**
  Close dialogue, discard changes
- **Get all Signals:**
  Try to get all signals from the C37 output connected to IP address, port and Id Code. All signals found are automatically added to the table.
- **Verify:**
  Verify if all signals in table are available from the C37 output connected to IP address, port and Id Code.
  The first non-existing signal is listed in an error message. The message “All signals were found.” is reported on success.

2.4 ComMeasure

2.4.1 Dialogue

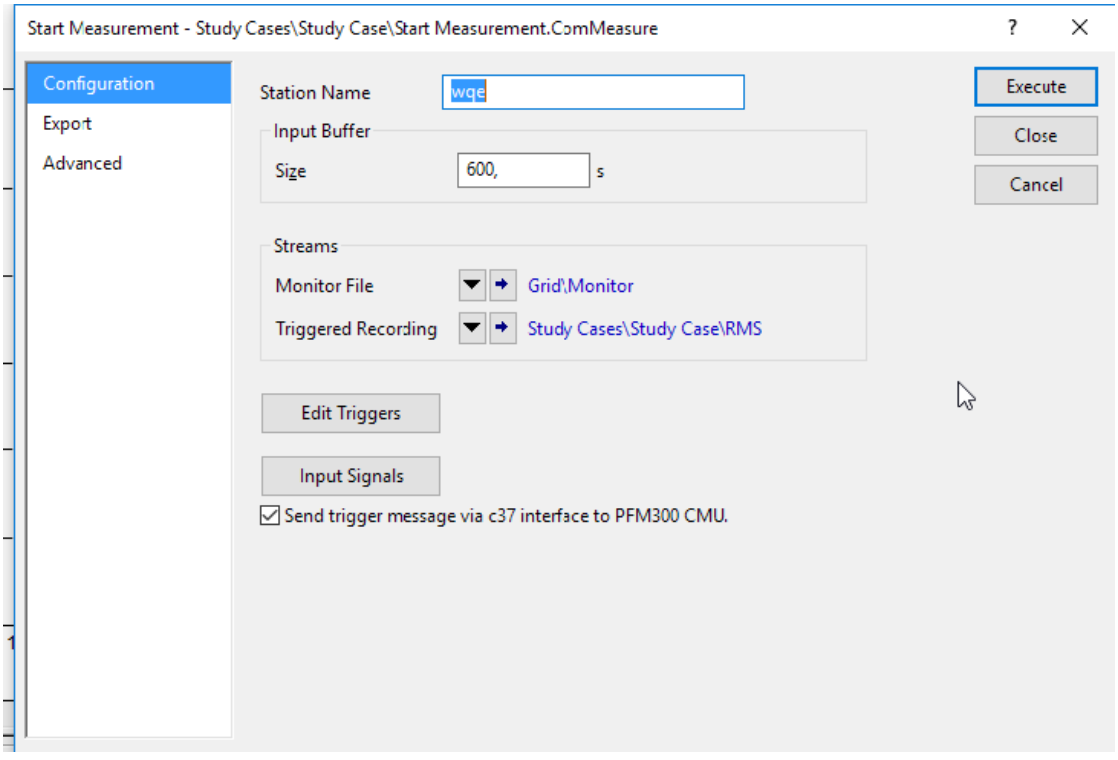

Figure 2.4: Start Measurement - Dialogue Box Configuration

2.4.2 Settings

Table 2.4: *ComMeasure* Configuration Parameter

Index	Parameter	Unit	Description	Detailed Explanation
01	station		Station Name	Station name displayed in event viewer
02	tsync		Input Buffer Size	Size of data cache for c37 data stream
03	p_monitor		Monitor File Stream	Stream for daily monitor recording
04	p_res_clk		Triggered Recording File Stream	Stream for triggered recording
05	c37trigger		Send trigger message via c37 interface to PFM300 CMU.	Enables signalling or trigger event to connected stream

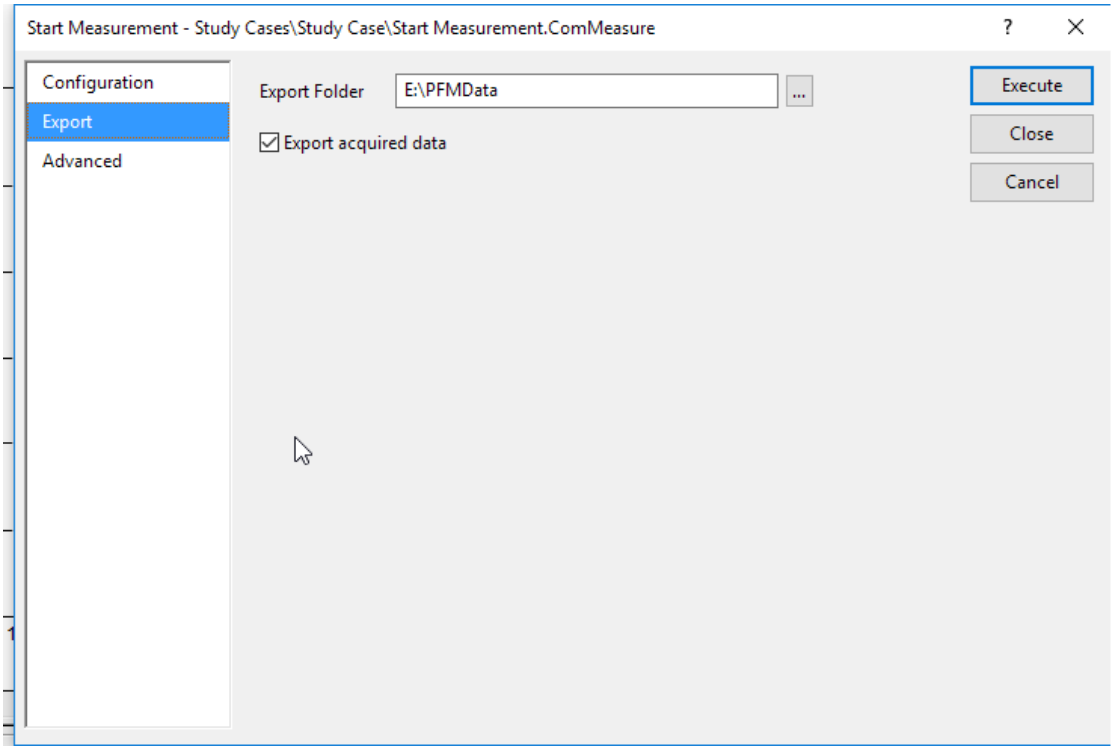

Figure 2.5: Start Measurement - Dialogue Box Export

2.4.3 Settings

Table 2.5: *ComMeasure* Export Parameter

Index	Parameter	Unit	Description	Detailed Explanation
01	extfold		Export folder	Folder to which the acquired comtrade files are written
02	iopt_expt		Export acquired data	Enable to force writing of trigger and monitor files

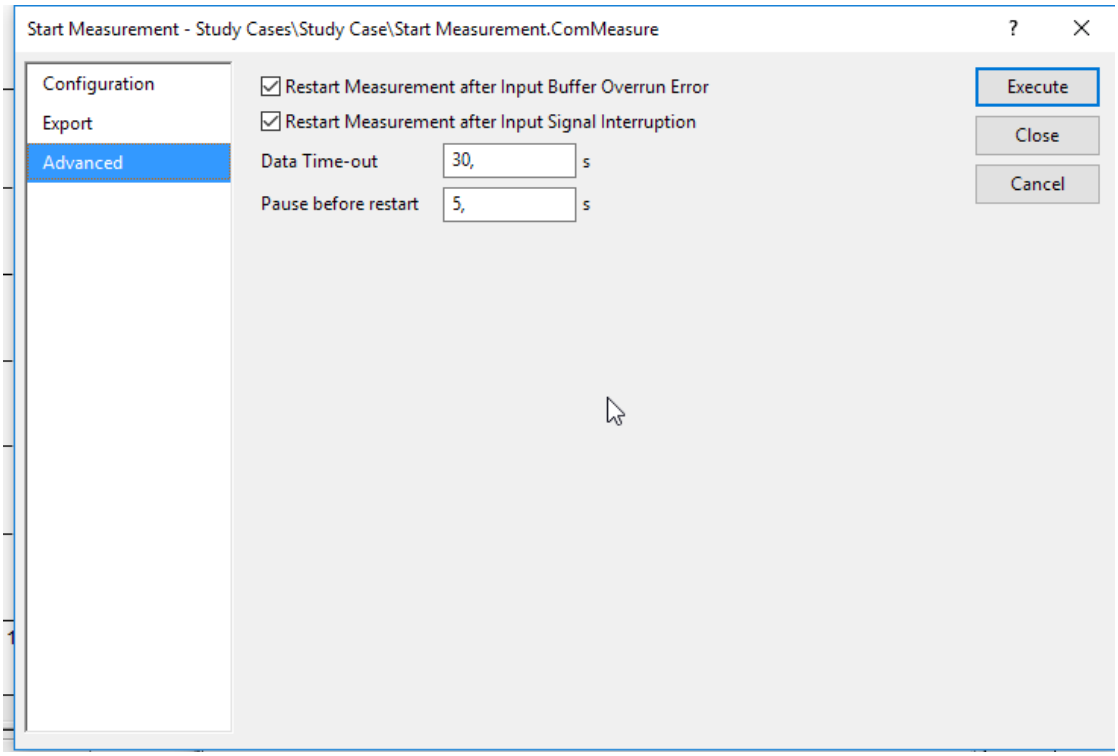

Figure 2.6: Start Measurement - Dialogue Box Advanced

2.4.4 Settings

Table 2.6: *ComMeasure* Advanced Parameter

Index	Parameter	Unit	Description	Detailed Explanation
01	iopt_res		Restart Measurement after Input Buffer Overrun Error	Enables automatic restart after buffer overrun.
02	iopt_nosig		Restart Measurement after Input Signal Interruption	Enables automatic restart after Input Signal Interruption.
03	data_timeout	s	Data Time-out	Measurement stops if there is no new data received for more than the given amount of time.
04	sync_delay	s	Pause before restart	

2.5 ElmRes

All texts written in blue on the dialogue pages of ElmRes are informational only and can not be modified by the user. It is assumed that they are self-explanatory, therefore the are not described in this reference.

2.5.1 Dialogue Basic Data - Monitor

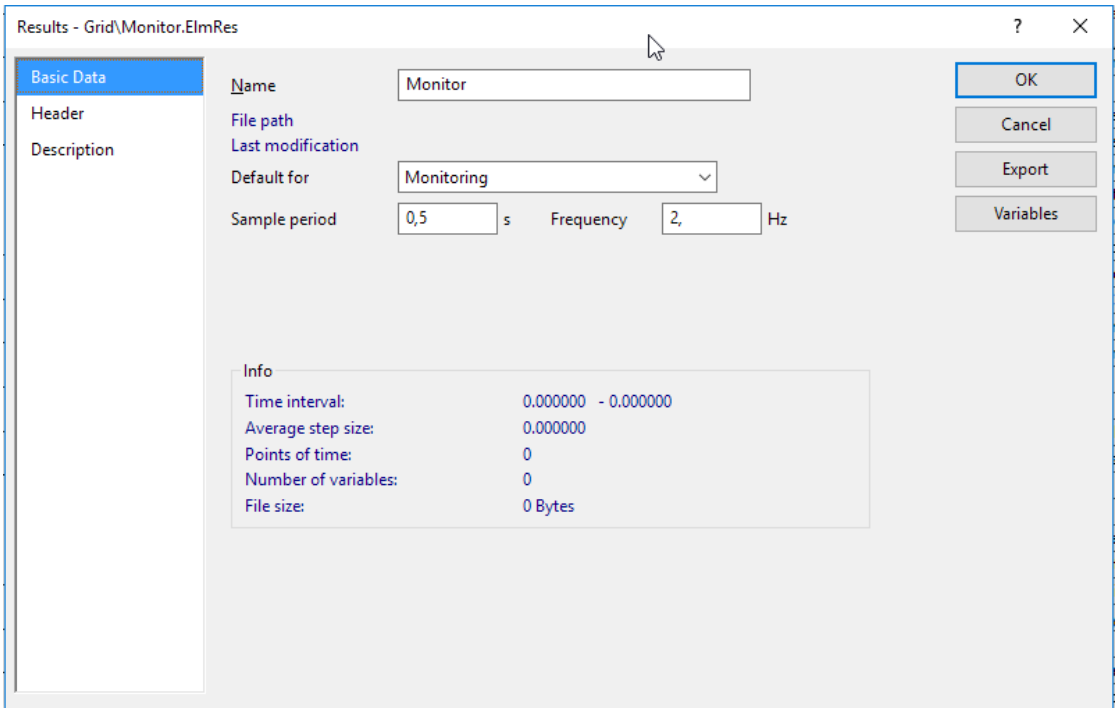

Figure 2.7: Result File Basic Page - Monitor Configuration

2.5.2 Settings

Table 2.7: *ElmRes* Basic Monitor Parameter

Index	Parameter	Unit	Description	Detailed Explanation
01	loc_name		Name	Object name
02	calTp		Default for	The type of result file
03	monitorStep	s	Sample period	Recording time step
04	monitorFreq	Hz	Frequency	Corresponding frequency $(1/monitorStep)$

2.5.3 Dialogue Basic Data - Triggered

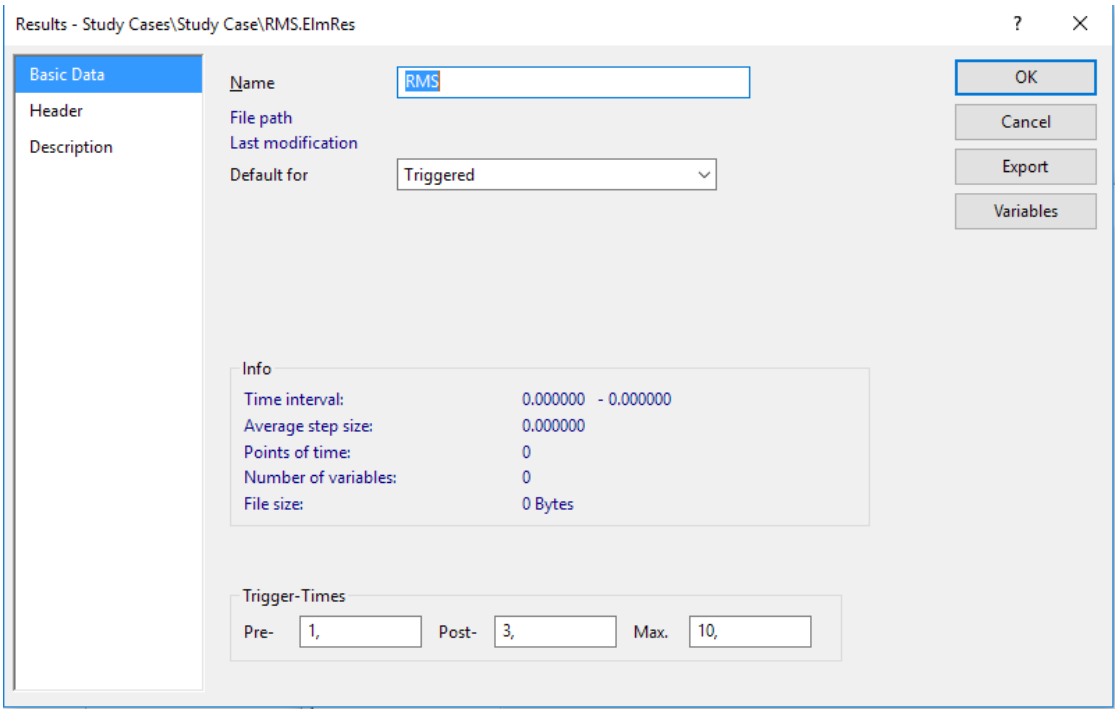

Figure 2.8: Result File Basic Page - Triggered Configuration

2.5.4 Settings

Table 2.8: *ElmRes* Basic Monitor Parameter

Index	Parameter	Unit	Description	Detailed Explanation
01	loc_name		Name	Object name
02	calTp		Default for	The type of result file
03	trg_pre	s	Pre-	Time period being recorded before trigger event
04	trg_post	s	Post-	Time period being recorded after trigger event
05	trg_pmax	s	Max.	Maximum pre-trigger time

2.5.5 Dialogue Header

The data on tab “Header” is not used for the recording.

2.5.6 Dialogue Description

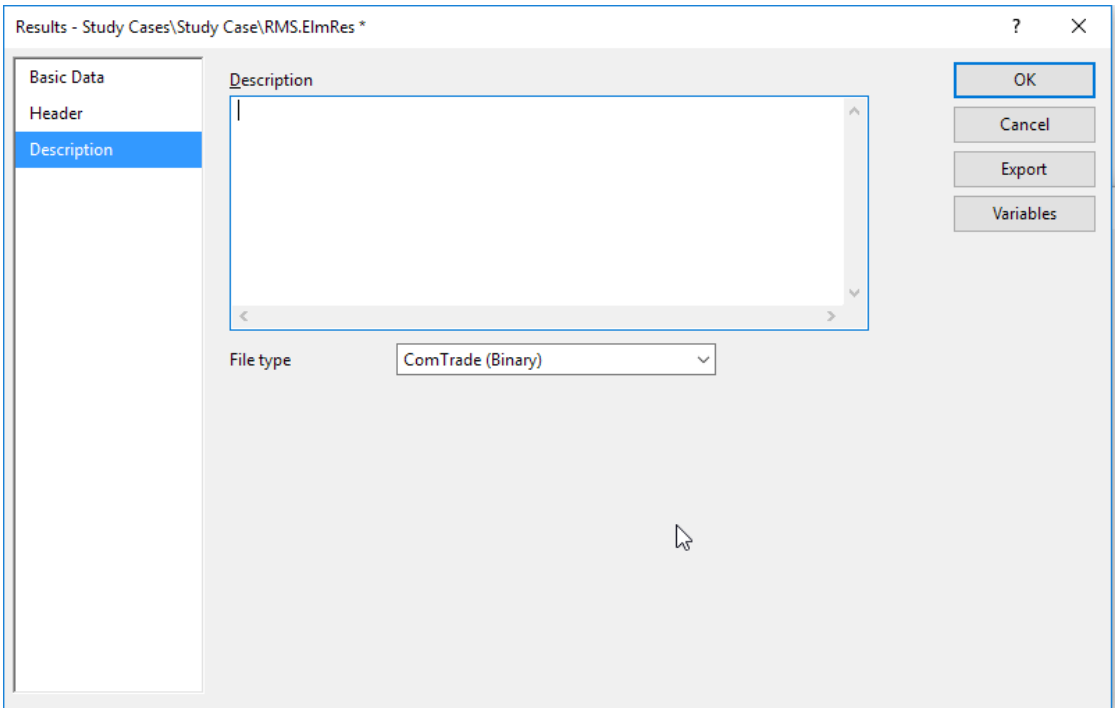

Figure 2.9: Result File Description

2.5.7 Settings

Table 2.9: *ElmRes* Basic Monitor Parameter

Index	Parameter	Unit	Description	Detailed Explanation
01	desc		Description	Object name
02	FileType		File type	Type of COMTRADE file (ASCII or BINARY)

3 Configuration

3.1 Network

The network is configured like any other network being used for simulation. The output signals of the model for the c37 input (ElmC37) can be connected vi block diagrams as for the DSL model. To run the simulation the “Start Simulation” is to be used.
The result file for the monitoring must be stored inside the grid folder or in any of its subfolders.
The monitoring result file does not need to be part of a composite model.

4 Messages

4.0.1 Informational Messages

1. **Measurement stopped by user.**
   Measurement was intentionally stopped by user.
2. **Simulation started at ...**
   Measurement was started at the time issued.
3. **Missing data**

4.0.2 Warnings

4.0.3 Errors

1. **Measurement cannot be started. Command must be part of an active project.**
   The start measurement command executed is not part of an active project.
2. **Export folder “pathname”does not exist.**
   The export path on page “Export ” does not exist.
3. **Cannot create directory “directoryname ”**.
   The directory can not be created. This message is issued only if there are insufficient access rights in the given export folder.
4. **“Configurationname”: Missing type.**
   There is no type assigned to the C37 element named Configurationname.
5. **Measurement cannot be started. All C37 input must use the same ip address and port.**
   Multiple ip addresses or ports are assigned to the C37 input stream. This is not supported by the measurement.

List of Figures

List of Tables