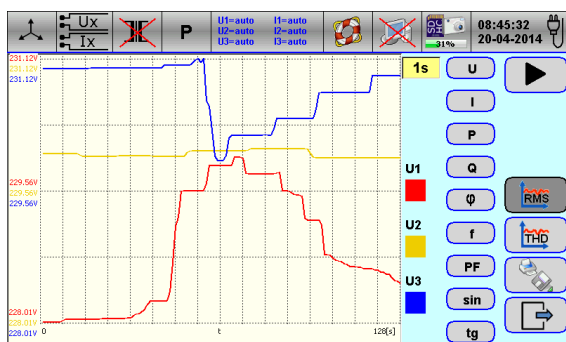


# The Calmet TE30 Power Quality Recorder and Analyzer - application note.

The Calmet TE30 can record, analyze and automatically evaluate the power network parameters according to the standards of the class A listed below:

- IEC 61000-4-30 -Testing and measurement techniques - Power quality measurement methods;
- IEC 61000-4-7 Testing and measurement techniques – General guide on the harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected to them;
- IEC 61000-4-15 Testing and measurement techniques - Flickermeter - Functional and design specifications;
- EN 50160 - Voltage Characteristics of the Public Distribution Systems.

There is a special function called **Trend Chart Display**, which can easily visualize the measurement results in a **real time** mode.



The **Trend Chart Display** function is used for displaying the changes over time in all of the relevant parameters for a three phase power network.

The Analyzer can store all of the parameters averaged in the 1-100 seconds step time.

The user can display simultaneously up to 3 trend charts of any stored parameters.

For the advanced and long term analysis of the power quality, the TE30 offers a **Recording function**.

Parameter	Time (t)	Unit	Limit	Time (t)	Unit
U	20	T	< 25	10	s
I	20	T	< 25	10	s
PQ	10	s	< 63	10	s
S	10	s	F	10	s
phi	10	s	TIDU	10	s
THDU	10	s	TIDI	10	s
THDI	10	s	PST	10	min
SignU	10	s	U/i	10	s

Recording limits configuration:

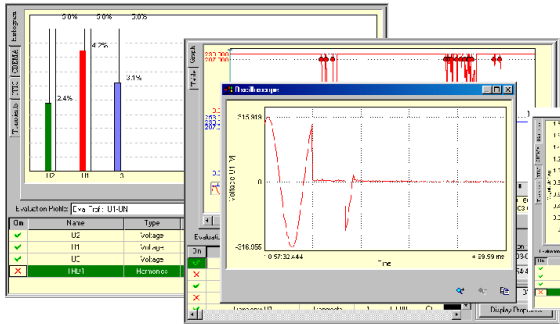
- U ≥ 230.000 V + 10.0000 %
- I > 5.00000 A
- E %

The **Recording function** is used for the registration of all the network parameters, and additionally for measuring dips, swells, interruptions, interharmonics, signal voltages and flicker.

Data recordings with time stamps are stored on the SD card (up to 32GB) for archiving and further analysis in the TE30 PC Soft program. It's possible to check for the EN 50160 compatibility or for individual users requirements.

The typical period of recording for a Power Quality evaluation is **1 week**, however the Calmet TE30 can record even up to **1 month**. The length of a recording depends on the number of parameters that the user wants to record, and on averaging of the time for each measured value from 1 period (=20ms for 50Hz), through minutes to hours and days.

All of the selected parameters and values are being recorded for each of the selected averaged time, plus the maximum and minimum values in the averaged period. Moreover, for very long recordings the values can also be recorded after passing the user set limits. Parameters can be recorded as an average below the set limits, and as a period by period after passing the limits.



All of the recorded parameters can be transferred to a PC by the means of an USB interface, Bluetooth or the Ethernet network.

The Calpro TE30 PC Software enables easy analysis of the recorded parameters in an automatic way, after which it can also automatically compare the recorded results with the standards requirement and generate the report in an Excel sheet.

## Parameters available in the Calmet TE30 Power Quality Analyzer and their compliance with Standards

Parameter	Accuracy	Procedure acc. IEC Standards
<b>Application</b>		
Contractual measurements	●	●
Error measurement / Quality assurance	●	●
<b>Measuring</b>		
<b>Voltage</b>		
Number of channels	3	●
Accuracy	● 0.05% and 0.1%	●
Dips / Overvoltages	●	● URMS
Interruptions	●	● URMS
Harmonics	● 2-64	●
Interharmonics	● 1-2, ... , 63-64	●
Signal voltages	●	○ $U_s \leq 3200$ Hz
Flicker Pst, Plt	●	● up to 40 Hz
Asymmetry	●	●
Transients	●	●
Voltage Un	●	calculated
EN 50160	●	automatic evaluation
<b>Current</b>		
Number of channels	3	
Accuracy	● 0.05% and 0.1%	●
Inrush	●	●
Harmonics	● 2-64	●
Interharmonics	● 1-2, ... , 63-64	●
Transients	●	●
Current IN	●	calculated
<b>Power</b>		
Active, Reactive, Apparent power	●	
Power factor	●	
Energy	●	

- Function available but not required by the standards
- Function available but not in full range of the standard
- Function not available
- Function available according to the IEC 61000-4-30, Class A



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