E.View and E.View+ Software

USER MANUAL POWER QUALITY MEASUREMENTS







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1 PURPOSE OF THIS MANUAL

- This manual is intended for anyone wishing to use the power quality features of the E.view and E.view+ software products in conjunction with a Enerium type 300 or 310 power monitor for the analysis and use of network quantity measurements (V (= phase-to-neutral voltage (V_{Ph-N}))), U (= phase-to-phase voltage (V_{Ph-Ph}))), I, F, THD).
- This manual describes:
 - The product's functions.
 - How to set up and use the product.
 - The product's characteristics.
- Enerdis has prepared his manual in order to provide simple and accurate information. Because of this, Enerdis cannot take any responsibility for any misinterpretation. While every effort has been made to ensure the manual is as accurate as possible, it may nevertheless contain technical inaccuracies and/or typographical errors.
- **□** The product owner should retain this manual for the entire service life of the product.
- □ Any information or suggestions for changes to this manual should be sent to:
 - The Publications Manager

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2 OVERVIEW

□ The power quality functions of the E.View et E.View+ software are not visible unless *ENERIUM 300 or 310* power monitors are specified as the product types within the application.



 Only the 'Configuration' and 'View' pages of the E.view and E.view+ software allow the Power Quality tabs to be used.

Configuration: complete device configuration derived from the application or downloaded with information from the Enerium concerned.

View: display, in tabular form, of the data measured or calculated by the device.





3 CONFIGURATION PAGE – POWER QUALITY TAB

This page allows the complete, immediate or delayed configuration of each of the devices on the network.

3.1 Access

Access is obtained by clicking on the icon of the selected device in the left-hand part (tree) of the window and then clicking on the Configuration icon.



3.2 Display selection

□ When selected, the following window appears:

Métrologie Communication Alarmes élémentaires Alarmes globales Courbes d'enregistrements Courbe de r	charge				
Index énergies Sorties analogiques Entrées analogiques IHM Défilement des écrans Ecrans utilisateur Que	alimètrie				
Statistiques EN50160 Détection évènements Captures d'ondes					
Seuil de conformité Objectif de	<u> </u>				

By default, tabs are displayed at the top and on multiple lines.

The Power Quality tab should be accessible.

3.3 Power Quality tab

□ This tab has three sub-tabs: 'EN 50160 statistics', 'Event detection', and 'Waveform capture'.

Réseaux\Nouveau canal\Reche	ercher/Nouvel apparei/Configuration						
Architecture métier	Métrologie Communication	Alarmes élém	entaires	Alarmes globales	Courbes d'enregistrements	Courbe de charge	Index énergies
Zone 4	Sorties analogiques E Statistiques EN50160 Détection évênem	entrées analogique ents Captures d'	s ondes	IHM	Defilement des écrans	Ecrans utilisateur	Qualmetrie
Statut Configuration		Seuil d	e conformité	Objectif de conformité			
Visualisation	Grandeur	Bas (%)	Haut (%)	(%)			
Graph, courbes	Fréquence Seu	il 1 -1,0	\$ 1,0	99,5 🚖			
Réseaux	Fréquence Seu	il 2 -6,0	\$ 4,0	100,0 🗢	Paramètres na	r Défaut	
E P Rechercher	Tensions Seuil	1 -10,0	\$ 10,0 \$	95,0 🚖		- Seider	
Nouvel appareil Section	Tensions Seuil	2 -15,0	\$ 10,0 \$	100,0 🗢			1
Configuration	Déséquilibre l	J	2,0	95,0 🚖	RAZ des Stat	istiques	
Visualisation	THD Global		8,0	95,0 🔶			14. F

3.3.1 'EN50160 statistics' sub-tab

- □ This sub-tab depends on how it is being used.
- □ The 'EN50160 Statistics' sub-tab' can set the thresholds and compliance objectives for the characteristics of the voltage supply with any variants, such as:

Frequency,

Voltage,

Waveform.

- □ The threshold values will be used for displaying the power quality data ('EN50160 Power Quality statistics' tab on the 'View' page, paragraph 4).
- □ Initially all the values in numeric fields are those recommended by EN50160.



3.3.1.1 The information displayed is:

Statistiques EN50160 Déte	ction évènements C	aptures d'on	des				
	Seuil de c	onformité	Objecti conforr	f de nité p	Paramétrage, pour une pé ourcentage attendu de vi	ériode de temps aleurs de la gran	donnée, du deur électrique
Grandeur	Bas (%)	Haut (%)	(%)	à	ompris dans la plage de	conformité	
Fréquence Seuil	1 -1,0 🚖	1,0 🚖	99,5	4			
Fréquence Seuil	2 -6,0 🗢	1	100,0	\$	Daramètr	oo oor Dófaut	
Tensions Seuil	1 -100 🛫	10,0 🚖	95,0	\$	Faraneu	es par Delaut	
Tensions Seuil 2	2 -15.0 숙	10,0 🚖	100,0	\$			
Paramétrage des limites loivent se situer les valer	basse et haute à urs attendues de l	l'intérieur d a grandeur	lesquelles mesurée.		RAZ des	Statistiques	
Statistiques EN50160	Détection évènements	Captures d	'ondes	tif do			
	Seulia	e comornin	confo	ormité			
Grande	ur (%)	Haut (%)	(*	%)			
Fréquence	Seuil 1 -1,0	1 ,0	\$ 99,5	\$			
Fréquence	Seuil 2 -6,0	\$ 4,0	\$ 100,0		Paramàtr	ee ner Défaut	
Tensions S	Seuil 1 -10,0	\$ 10,0	\$ 95,0	\$	raiameu	es par beraut	
Tensions S	euil 2 -15,0	10,0	\$ 100,0				1
Déséquilit	ore U	2,0	\$ 95,0	\$	RAZ des	s Statistiques	
THD Glo	bal	8,0	\$ 95,0	\$			
Harmoniques	Sec conf	uil de ormité	Objectif de conformit	e é	Harmoniques Tension	Seuil de conformité	Objectif de conformité
Impair	rs ((%)	(%)	T I	Pairs	(%)	(%)
H03	5,0		95,0	1	H02	2,0	95,0 🗢
HUS	6,0		05.0	1 7	HU4		05.0
HOP	5,0		95.0	1	HUS	0.5	95.0
H11	3.5		95.0	J T	H10	0.5	95.0
H13	3.0		95,0	1	H12	0.5	95,0
H15	0.5		95.0	Ī	H14	0.5	95.0
H17	2,0	•	95,0 🚖	Ī	H16	0,5	95,0 🜩
H19	1,5	•	95,0 🚖	Ī	H18	0,5	95,0 🗢
H21	0,5	•	95,0 🚖	I	H20	0,5	95,0 🚖
H23	1,5	•	95,0 🚖	I	H22	0,5	95,0 🗢
H25	1,5	•	95,0 🚖	I	H24	0,5	95,0 🚖

Figure 3-1: Example of 'EN50160 statistics' sub-tab display

• Frequency Threshold 1 and Frequency Threshold 2: correspond to variations in the supply frequency.

[EN50160] The nominal supply frequency should be 50 Hz. Under normal operating conditions, the average value of the fundamental frequency measured over periods of 10 seconds should be within the following ranges:

- 50 Hz ± 1% for 99.5 % of the year (Default values for Frequency Threshold 1)
- 50 Hz +4%/-6% for 100% of the year (Default values for Frequency Threshold 2)

e.g. Frequency Threshold 1

0

 \cap

- Low Threshold: 1 % : Corresponds to a numerical value of 49.5 Hz
- High Threshold: + 1 % : Corresponds to a numerical value of 50.5 Hz
- ➢ Compliance target: 99.5 %.
- VoltageThreshold 1 and Voltage Threshold 2: correspond to variations in the supply voltage.
 [EN50160] For each one-week period, 95% of the RMS values of the supply voltage averaged over 10 minutes must be in the range Un ± 10% (Default Voltage Threshold 1 values).

All the RMS values of the supply voltage averaged over a period of 10 minutes must be in the range Un - 15% and Un + 10% (Default Threshold Voltage 2 values).





- U Unbalance: corresponds to imbalance in the supply voltage.
 [EN50160] For each one-week period, 95% of the RMS values averaged over 10 minutes of the negative sequence component of the supply voltage must be between 0 and 2% of the direct component. (Default U unbalance value).
- Global THD and voltage harmonics: corresponds to the total voltage harmonic distortion, and voltage harmonics up to the 25th order harmonic.
 [EN50160] During each period of one week, 95% of the RMS values of each harmonic voltage averaged over 10 minutes must not exceed the values shown. The overall distortion of the supply voltage must not exceed 8%. (Default global THD and voltage harmonics for even and odd orders).

3.3.1.2 Threshold and goal parameterisation:

□ Numerical values contained in the fields can be changed either by clicking on the ¹ button or by entering the numeric value on the keyboard.

3.3.1.3 Data transfer

- Transferring the modified values to the device is carried out as follows:
 - Ensure the device is connected to the PC, otherwise click on I (Connect) or press F9 to connect the device.
 - Click on ⁵ (Send) or press F4 to transfer the new values to the device.

3.3.1.4 Limit values that can be set by the user

□ The user can change the default values within the limits given below

Quantity	Criterion				
	Low compliance threshold (%)	High compliance threshold (%)	Compliance target (%)		
Frequency Threshold 1	from - 3.0% to - 1.0%	from 1.0% to 3.0%	from 0.0% to 100.0%		
Frequency Threshold 2	from - 15.0% to - 4.0%	from 4.0% to 15.0%	from 0.0% to 100.0%		
Voltage Threshold 1	from - 10.0% to -5.0%	from 5.0% to 10.0%	from 0.0% to 100.0%		
Voltage Threshold 2	from - 20.0% to -10.0%	from 10.0% to 20.0%			
U unbalance		from 1.0% to 5.0%	from 0.0% to 100.0%		
Global THD		from 1.0% to 15.0%	from 0.0% to 100.0%		

Figure 3-2 Ranges of allowed values for the variables F, U, U unbalance and Global THD

- The setting values of the criterion 'Compliance goal' vary in steps of ± 0.1% by clicking on the button for all quantities.

3.3.1.5 'Default parameters' and 'Statistics reset' buttons

Paramètres par Défaut	The 'Default settings' button resets all the numeric values to the EN50160 defaults.
	The 'Reset statistics' button does not affect this page.
	It enables a command to be sent directly to the device to perform a reset of the various records displayed on the 'View' page of the 'EN50160 power quality' tab
RAZ des Statistiques	(see section 4.3).



3.3.2 'Event detection' sub-tab

- □ This sub-tab concerns situations which are the result of faults or outages on the electricity grid.
- □ The 'Event detection' sub-tab enables detection thresholds to be specified based on which network disturbances are stored in the device.

The disturbances can be:

- Overvoltages, voltage dips, or outages,
- Overcurrent.
- □ The data stored in the device can then be displayed on the 'Power quality V U I' tab on the 'View' page (paragraph 5).
- Data recording in the device is only possible if the checkbox 'Activate dip, outage, overvoltage/overcurrent' is checked:

Activation Creux, Coupure, Surtension / Surintensité

3.3.2.1 The information displayed is:

	Statistiques EN50160 Détection évènements Captures d'ondes
	Activation Creux, Coupure, Surtension / Surintensité
S	Tension déclarée (Ph-N) Seuils Courants
р	100 🔶 Uc (V) 110 🚖 Surintensité (%TC primaire)
e	
i	110 ♦ Surtension (%Uc)
f	90 Creux (%Uc)
i	10 Coupure (%Uc)
e d	Transitions Coupures
ŭ	2 🔶 Hystérésis (%Uc) 1 🔶 Nombre de demi-période(s)
v	
0	Types de Coupures (ms)
	de à
t	0:00.010 0:01.000 🗲 Très Brève
a	0:01.000 3:00.000 🖨 Brève
e e	3:00.000 Longue
	Paramètres par défaut RAZ des évènements

Figure 3-3: Example of 'Event detection' sub-tab display

Declared votlage (Uc): The specified voltage is usually the same as the nominal mains voltage. It depends on the 3-phase network:

- If the type of wiring specified in the 'Metrology' tab of the 'Configuration' page is '4 wire', then the value of the specified voltage corresponds to a phase-to-neutral voltage (Ph-N). This is the default method of wiring.
- If the type of wiring specified in the 'Metrology' tab of the 'Configuration' page is '3 wire', then the value of the specified voltage corresponds to a phase-to-phase voltage (Ph-Ph).
- If the type of wiring is changed on the Metrology tab of the 'Configuration' page, the user should reset the display of the 'Event detection' tab on the 'Configuration' page.



- Voltage thresholds: Overvoltage (% Uc), Dip (% Uc), Outage (% Uc), Hysteresis (% Uc) : The threshold values are given by way of an example. These values are related to the numerical value of the specified voltage Uc entered earlier.
 - An overvoltage will be detected by the device only if the measured voltage is greater than 110% of the specified voltage Uc.
 - A dip will be detected by the device only if the measured voltage is less than 90% of the specified voltage Uc.
 - [EN50160]: Voltage variations that do not reduce the supply voltage to a value less than 90% of the specified voltage are not considered as voltage dips.
 - An outage will be detected by the device only if the measured voltage is less than 10% of the specified voltage Uc.
 - Hysteresis (% Uc): applies here to all voltage events, and is used in the calculation of the normal values that follow the event. Taking as an example the previous screen, it applies as follows:
 - Overvoltage: the overvoltage is detected if the measured voltage is greater than 110% of Uc, or 110 V. Subsequent to this overvoltage, the so-called 'back to normal' voltage will have a value of 110 V 2% of Uc, or 108 V.
 - Dip: the voltage dip is detected if the measured voltage is less than 90% of Uc, or 90 V.
 Subsequent to this dip, the so-called 'back to normal' voltage will have a value of 90 V 2% of Uc, or 92 V.
 - Outage: an outage is detected if the voltage measured by the device is less than 10% of Uc, or 10 V. Subsequent to this outage, the values measured by the device which are greater than 10 V + 2% of Uc, i.e. 12 V, will no longer be placed in the 'outages' category.
- Current thresholds: Overcurrent (% CT primary), Hysteresis (% CT primary):

The threshold values given are by way of an example. They are related to the numerical value of the primary current of the current transformer specified in the 'Metrology' tab of the 'Configuration' page.

- An overcurrent will not detected by the device unless the current measured in the primary of the current transformer becomes greater than 110% of the primary current defined in the 'Metrology' tab of the 'Configuration' page.
- Hysteresis (% CT primary): This applies to the overcurrent event. Taking as an example the previous screen, it applies as follows:
 - The overcurrent is detected if the measured current is greater than 110% of the CT primary, or 110 A. Subsequent to this overcurrent, the value called the 'back to normal' current will have a value of 110 A 2% of the CT primary, or 108 A.
- Outage transitions : Setting the number of half periods where there is an outage of the power supply. This parameter will trigger an 'Outage' type event.
- Outage types (ms) Setting the duration of power outages (disconnections).
 [EN50160]: A short break (up to 3 minutes) is caused by a transient fault. A long break (over 3 minutes) is caused by a permanent fault.

The minimum value of a very short outage that can be set is 10 ms.

The display 0:01.000 is of the form: mm:ss:ms, with

- mm = minutes
- ss = seconds
- ms = milliseconds

3.3.2.2 Setting a threshold or changing a duration:

- □ Numerical values contained in the fields can be changed either by clicking on the ¹ button or by entering the numeric value on the keyboard.
- □ The device must then be connected and the new data transferred to it (paragraph 3.3.1.3)



3.3.2.3 Limit values that can be set by the user

□ The user can change the default values within the limits given below:

-			
Voltage section	Uc (V)	(% Uc)	
Specified voltage (Ph-N or Ph-Ph)	from100 V to 650,000 V		
Voltage thresholds		from 105% to 120%	
Overvoltage		from 0 % to 95	
Dip		from 0 % to 10	
Outage		from 1% to 5 %	
Hysteresis			
Current Section	(% CT Primary)		
Current thresholds			
Overcurrent	from 105% to 120%		
Hysteresis	from 1% to 5%		
Outages	Number of half periods	from (mm:ss:ms)	to (mm:ss:ms)
Outage transition	from 0 to 5		
Types of outage			
Very short		0.00.010	0.01.000
Short		Copy the "to" "Very short" value	5.00.000
Long		Copy the "to" "Short" value	

Figure 3-4: Allowed value ranges for the criteria related to event detection

All the values in the table above can be varied in steps of ± 1 by clicking on the Ξ button.

3.3.2.4 'Default parameter' and 'Events reset' buttons

Paramètres par Défaut	The 'Default Settings' button enables all the numeric values in the fields to be reset.
	The 'Reset events' button does not affect this page.
RAZ des évènements	It enables a command to be sent directly to the device to reset the various records displayed on the 'Power quality $V - U - I$ ' tab on the 'View' - page ('Closing events', paragraph 5.3.1 and waveform table, paragraph 5.3.2)

3.3.3 'Waveform capture' sub-tab

- This sub-tab enables the variables to be stored in the device and defines the type of event that will trigger recording.
- □ All changes in the quantities being stored can then be seen in the 'Power quality V U I' tab on the 'View' page (paragraph 5).



0

3.3.3.1 The information displayed is:

Statistiques EN50160 Détection évènements Captures d'ondes Grandeurs à enregistrer V1 Grandeur 1 V2 Grandeur 2 Coupure Très Brève V3 Grandeur 3 Coupure Brève I1 Grandeur 4 Coupure Brève avec creux préalable Paramètres par Défaut Coupure Ingue avec creux préalable Déclenchement manuel Entrée synchro

Figure 3-5: Example of 'Waveform capture' sub-tab display

- Quantities to be recorded: It is possible to record four quantities simultaneously on the device.
 - If the type of wiring specified on the 'Metrology' tab on the 'Configuration' page is '4 wire', then it is possible to record phase voltages and/or line voltages on the device, as well as currents. This is the default method of wiring.
 - If the type of wiring defined on the 'Configuration' page on the 'Metrology' tab is '3 wire', then only line voltages and line currents can be recorded on the device



The following table lists the quantities that can be recorded:

Symbol	Physical quantity
I1, I2, I3, In	Currents averaged over a second.
V1, V2, V3	Phase voltages averaged over a second.
U12, U23, U31	Line voltages averaged over a second.

Figure 3-6: List of the quantities that can be recorded (Waveform capture)

- Triggering recording: The events that trigger recording are selected here by checkbox.
 - For events of type 'Overvoltage', 'Dip', 'Outage' and 'Overcurrent', the recording triggering values are those defined in the 'Events Detection' tab on the 'Configuration' page (paragraph 3.3.2)
 - If the product is equipped with a digital input option on one of the cards, it is possible to use one of the channels specified in Synchro pulse input to trigger the recording of a waveform.

3.3.3.2 'Default parameters' and 'Manual triggering' buttons



The 'Default Settings' button enables all the numeric values in the fields to be reset.



The 'Manual triggering' button sends a command to the device to capture a waveform which can be seen in the 'Waveform table' sub-tab on the 'View' page (paragraph 5.3.2)



4 VIEW PAGE – EN50160 POWER QUALITY STATISTICS TAB

- □ This page enables the display, in tabular form, of the data measured or calculated by the device.
- □ In accordance with EN50160, the data are calculated over a period of one week.
- □ The voltages displayed depend on the type of wiring used. The phase voltages (V) will be displayed in the 4-wire case, and line voltages (U) in the case of 3-wire.
- □ The data shown in the tables are directly linked with the preset thresholds set in the 'EN50160 Statistics' sub-tab on the 'Configuration' page (paragraph 3.3.1)

4.1 Access

Access is obtained by clicking on the icon of the selected device in the left-hand part (tree) of the window and then clicking on the View icon.

1	*
ė. 👷	Réseaux
Ē.	🔍 Nouveau canal
	E Rechercher
	🖻 🖏 UP2 - E300
	Description
	- 🏷 Statut
	- 🏭 Configuration
	Diagnostic
	Visualisation
	Graph. ins ntan
	Graph. courbes

4.2 Display selection

When selected, the following window appears:

r\UP2 - E300\Visualisation									•
Instantanées Moye	ennes 🛛 🕅	/aximum	Minimum	Co	moteurs	Entrée analogique	ТНО	& Harmoniques	Iournal des alarmes
Courbes d'enregistre	ments	Cou	rbe de charge		Qu	alimétrie stat. EN50160		Qualimétrie é	evènements V - U - I
Semaine en cours Semai	ne -1								1
Qualimètrie stat. EN50160 - Sem.									

By default, tabs are displayed at the top and on multiple lines.

The' 'EN50160 Power Quality statistics' and 'V-U-I Power Quality events' should be visible.

4.3 EN50160 Power Quality statistics tab

□ Clicking on the 'EN50160 Power Quality statistics' tab displays two sub-tabs: 'Current Week' and 'Week -1.

Instantanées Moyennes Maximum	Minimum Compteurs THD & Harmoniques	Journal des alarmes Courbes d'enregistrements				
Courbe de charge	Qualimétrie stat. EN50160	Qualimétrie évènements V - U - I				
Semaine en cours Semaine -1						
Qualimètrie stat. EN50160 - Sem.						

4.3.1 'Current week' sub-tab

The data displayed in this table correspond to a reading on the device of the compliance values of the following quantities: frequency (Frequency), voltages (V) or (U),voltage unbalance (U unbalance) global harmonic distortion of each of the voltages displayed (V THD or U THD), and voltage harmonics up to the 25th order harmonic.

		Qualimètrie stat. EN	50160 - Sem.			
Nombre de cyc	les					
388	10 Minute(s)					
23230	10 secondes					
Grandeur	Seuil de conformité bas	Seuil de conformité haut	Objectif de conformité	Valeur de conformité	Statut	Π.
req. Taux 1	-1,0	1,0	99,5	99,70	1	10
req. Taux 2	-6,0	4,0	100,0	99,70		
/1 Taux 1	-10,0	10,0	95,0	99,48	1	
/2 Taux 1	-10,0	10,0	95,0	99,48	1	
/3 Taux 1	-10,0	10,0	95,0	99,48	1	
/1 Taux 2	-15,0	10,0	100,0	99,48	*	
/2 Taux 2	-15,0	10,0	100,0	99,48		
/3 Taux 2	-15,0	10,0	100,0	99,48		
Des. U		2,0	95,0	100,00	1	
FHD V1		8,0	95,0	100,00	1	
THD V2		8,0	95,0	100,00	1	
LHD A3		8,0	95,0	100,00	1	
102 V1		2,0	95,0	100,00	1	
102 V2		2,0	95,0	100,00	1	
102 V3		2,0	95,0	100,00	1	
103 V1		5,0	95,0	100,00	1	
102 1/2		5.0	95.0	100.00	4	

Figure 4-1: Example of 'EN50160 statistics' sub-tab display



4.3.1.1 'Number of cycles' window

Nombre de cycles	
388	10 Minute(s)
23230	10 secondes

Cumulative value over the integration period defined in the 'Metrology' tab of the 'Configuration' page - (e,g. 10 minutes), of the number of measurement cycles executed to calculate the compliance value.

4.3.1.2 Interpreting the table

- □ The table is interpreted as follows:
 - Quantity: quantity displayed
 - Low compliance threshold taken from the minimum threshold for the quantity concerned, defined on the 'Configuration' page on the 'EN50160 Statistics' tab (paragraph 3.3.1.1) [displayed in tenths of a %].
 - Low compliance threshold taken from the minimum threshold for the quantity concerned, defined on the 'Configuration' page on the 'EN50160 Statistics' tab (paragraph 3.3.1.1) - [displayed in tenths of a %].
 - Compliance goal: taken from the compliance goal defined on the 'Configuration' page on the 'EN50160 Statistics' tab (paragraph 3.3.1.1) [displayed in tenths of a %].
 - Compliance value: Numerical value calculated by the device relative to the number of measurement cycles performed in hundredths of a %.
 - Status



4.3.1.3 'Statistics reset' button

Statistics reset: the compliance values are reset when this button is clicked.

4.3.2 'Week-1' sub-tab

□ The data shown in the table are the same as those displayed in the 'Current week' sub-tab (paragraph 4.3.1), but for the previous week.



5 VIEW PAGE – V – U – I POWER QUALITY EVENTS

- **D** This page enables the display, in tabular form, of the data measured and recorded by the device.
- □ The data displayed in the tables is directly linked to:
 - the predefined thresholds (see 'Configuration' on the 'Event detection sub-tab' in 3.3.2) and
 - the type of event triggering the recording (see the 'Wave capture' sub-tab on the 'Configuration' page on paragraph 3.3.3).

5.1 Access

Access is obtained by clicking on the icon of the selected device in the left-hand part (tree) of the window and then clicking on the View icon.



5.2 Display selection

□ When selected, the following window appears:

er/UP2 - E300/Visualisation			•					
Instantanées Moyennes	Maximum Minimum Compteurs Entrée analogique	THD & Harmoniques	lournal des alarmes					
Courbes d'enregistrements	Courbe de charge Qualimétrie stat. EN50160	Qualimétrie	évènements V - U - I					
Semaine en cours Semaine -1								
Qualimètrie stat. EN50160 - Sem.								

By default, tabs are displayed at the top and on multiple lines.

The' EN50160 power quality statistics' and "V-U-I Power Quality events' should be visible.

5.3 V - U – I Power quality events tab

Clicking on the 'V - U - I power quality events' tab will display at most 3 sub-tabs: 'Closing events', 'Waveform table' and 'Waveforms'.

Instantanées	Moyennes	Maximum Mir	inimum Cor	mpteurs	Entrée analogique	1	THD & Harmoniques	Journal des alarmes
Courbes d'enregistrements		Courbe de charge		Qualimétrie stat. EN50160			Qualimétrie év	vènements V - U - I
Evènements clôturés	Tableau forme d'onde	Forme(s) d'onde(s)						

The default display shows only the first two tabs metioned.

5.3.1 'Closing events' sub-tab

- The data shown correspond to readings of the one-second extreme values of the phase voltage (V) or line voltage (U)and the currents (I).
- Data is displayed only after a device has been connected and the 'Download events' button has been clicked.

Caushas	d'accesistements	Ann Minimum		o Cuelimiteis etei	ENEO160	Ouslimétrie é	vènemente V - II -
Courbes	d enregistrements	Courbe de charge	1	Qualimetrie star	L EN50160	Qualified le e	venements v - 0 -
ents clôt	urés Tableau forme d'onde For	me(s) d'onde(s)					
			Evènemen	ts clôturés			
_	- Date de début	Durée (ms)	Grandeur	Extremum	Type d'	évènement	
	12/01/2013 10:40:00 .792	0:00:00.010	V1	170,73 V	Creux		
	12/01/2013 10:40:00 .792	0:00:00 .010	V2	170,71 V	Creux		
	12/01/2013 10:40:00 .792	0:00:00 .010	V3	170,50 V	Creux		
-	12/01/2013 10:39:57 .967	0:00:02.825	V3	0,00 V	Coupur	e brève avec creux préa	lable
	12/01/2013 10:39:57 .967	0:00:02 .825	V2	0,00 V	Coupur	e brève avec creux préa	lable
-	12/01/2013 10:39:57 .967	0:00:02 .825	V1	0,00 V	Coupur	e brève avec creux préa	lable
-	12/01/2013 10:39:57 .557	0:00:00 .010	V1	195,35 V	Creux		
	12/01/2013 10:39:57 .557	0:00:00 .010	¥2	195,35 V	Creux		
	12/01/2013 10:39:57 .557	0:00:00 .010	V3	195,36 V	Creux		
-	12/01/2013 10:39:57 .417	0:00:00.140	V3	0,00 V	Coupure	e très brève	
	12/01/2013 10:39:57 .417	0:00:00.140	¥2	0,00 V	Coupur	e très brève	
-	12/01/2013 10:39:57 .417	0:00:00.140	V1	0,00 V	Coupur	e très brève	
	12/01/2013 10:20:27 .621	0:16:31 .067	V1	0,00 V	Coupur	e longue	
	12/01/2013 10:20:27 .621	0:16:31 .067	V2	0,00 V	Coupur	e longue	
	12/01/2013 10:20:27 .621	0:16:31 .067	V3	0,00 V	Coupur	e longue	
-	09/01/2013 16:05:08 .947	0:01:01 .451	V3	0,00 V	Coupur	e brève	
	09/01/2013 16:05:08 .947	0:01:01 .451	V2	0,00 V	Coupur	e brève	
-	09/01/2013 16:05:08 .947	0:01:01 .451	V1	0,00 V	Coupure	e brève	
•	05/01/2013 14:58:26 .002	0:00:00.790	¥3	0,00 V	Coupur	e très brève avec creux	préalable
-	05/01/2013 14:58:26 .002	0:00:00.790	¥2	0,00 V	Coupur	e très brève avec creux	préalable
•	05/01/2013 14:58:26 .002	0:00:00.790	V1	0,00 V	Coupur	e très brève avec creux	préalable
-	05/01/2013 14:58:22 .413	0:00:01 .250	¥3	0,00 V	Coupur	e brève avec creux préa	lable
-	05/01/2013 14:58:22 .413	0:00:01 .250	¥2	0,00 V	Coupur	e brève avec creux préa	lable
	05/01/2013 14:58:22 .413	0:00:01 .250	V1	0,00 V	Coupur	e brève avec creux préa	lable
	01/01/2013 19:07:54 .521	0:00:00 .010	V1	185,01 V	Creux		
	01/01/2013 19:07:54 .521	0:00:00 .010	¥2	185,10 V	Creux		
	01/01/2013 19:07:54 .521	0:00:00 .010	V3	185,20 V	Creux		
	01/01/2013 19:07:46 .626	0:00:07 .895	V1	0,00 V	Coupur	e brève	*

Figure 5-1: Example of 'EN50160 statistics' sub-tab display



5.3.1.1 Interpreting the table

□ The table is interpreted as follows:

Column 1: indicates whether the waveforms stored in the device have been downloaded into the PC.

The waveforms stored on the device can be downloaded onto the PC to be used. Downloading can be carried out in one of two ways:

By clicking on the green arrow icon,

• By double-clicking on the line corresponding to the event to be downloaded.

The 'Waveforms' sub-tab appears when the data have been downloaded.

Downloading the waveform has been completed. Data relating to the event are available in tabular form on the 'Waveform' sub-tab.

No arrow is displayed: the event was recorded in the machine, but no waveform is associated with it. A waveform is stored in the device only if the triggering event was selected in the 'Events detection' sub-tab on the 'Configuration' page (paragraph 3.3.2).

Start date: timestamp (date and date) when the recording of the event occurred.

Length (ms): duration of the event concerned (in the form mm:ss:ms).

Quantity: taken from the quantity information to be recorded defined in the 'Waveform capture' subtab on the 'Configuration' page (paragraph 3.3.3).

Extremum: Instantaneous maximum value of the quantity concerned.

Event type: taken from the recording triggering information defined in the 'Waveform capture' subtab on the 'Configuration' page (paragraph 3.3.3).

5.3.1.2 'Download events' and Reset events' buttons.

Relève évènementsThe 'Download events' button enables the last 1024 events stored in the device to
be downloaded onto the PC and and refreshes the tabular display.RAZ EvènementsThe 'Reset events' button enables a command to be sent directly to the device to
reset the various records displayed on the 'Closing events' sub-tab (paragraph
5.3.1) and the 'Waveform table' sub-tab (paragraph 5.3.2).

5.3.2 'Waveform table' sub-tab

- The data shown correspond to readings of the events associated with the phase voltage (V), line voltage (U) and the currents (I).
- Data is displayed in the table only if after device has been connected.
- □ The display shows the 16 most recent events that replace the oldest ones.

			Tableau forme	d'onde	
	Date de début	Durée (ms)	Grandeur(s)	Type d'évènement	Nb Cycles
-	12/01/2013 10:39:57 .321	0:00:00 .299	V1, V2, V3, I1	Coupure très brève	15
	12/01/2013 10:39:56 .882	0:00:03 .973	V1, V2, V3, I1	Coupure brève avec creux préalable	147
	12/01/2013 10:39:56 .882	0:00:03 .973	V1, V2, V3, I1	Coupure brève avec creux préalable	147
-	12/01/2013 10:39:56 .882	0:00:03 .973	V1, V2, V3, I1	Coupure brève avec creux préalable	147
-	05/01/2013 14:58:22 .328	0:00:01 .398	V1, V2, V3, I1	Coupure brève avec creux préalable	70
	05/01/2013 14:58:22.328	0:00:01 .398	V1, V2, V3, I1	Coupure brève avec creux préalable	70
	05/01/2013 14:58:25 .908	0:00:00 .959	V1, V2, V3, I1	Coupure très brève avec creux préalable	48
	05/01/2013 14:58:25 .908	0:00:00.959	V1, V2, V3, I1	Coupure très brève avec creux préalable	48
	05/01/2013 14:58:25 .908	0:00:00 .959	V1, V2, V3, I1	Coupure très brève avec creux préalable	48
	09/01/2013 13:51:48 .971	0:00:02 .999	V1, V2, V3, I1	In Rush	150
	09/01/2013 15:48:20 .766	0:00:03 .002	V1, V2, V3, I1	In Rush	150
•	09/01/2013 16:05:08 .861	0:01:01 .601	V1, V2, V3, I1	Coupure brève	150
	09/01/2013 16:05:08 .861	0:01:01 .601	V1, V2, V3, I1	Coupure brève	150
	09/01/2013 16:05:08 .861	0:01:01 .601	V1, V2, V3, I1	Coupure brève	150
	12/01/2013 10:39:57 .321	0:00:00 .299	V1, V2, V3, I1	Coupure très brève	15
4	12/01/2013 10:39:57 .321	0:00:00 .299	V1, V2, V3, I1	Coupure très brève	15

Figure 5-2: Example of the 'Waveform table' sub-tab display



5.3.2.1 Interpreting the table

- □ The table is interpreted as follows:
 - Column 1: indicates whether the waveforms stored in the device have been downloaded onto the PC.
 - The waveforms stored on the device should be downloaded onto the PC to be used. Downloading can be carried out in one of two ways:
 - By clicking on the green arrow icon,
 - By double-clicking on the line corresponding to the event to be downloaded.
 - The 'Waveforms' sub-tab appears when the data have been downloaded.
 - Downloading the data stored on the device has been completed. Data relating to the event are available in tabular form on the 'Waveform' sub-tab.
 - Start date: timestamp (date and date) when the recording of the event occurred.
 - Length (ms): duration of the event concerned (in the form mm:ss:ms).
 - Quantity: taken from the quantity information to be recorded defined in the 'Waveform capture' subtab on the 'Configuration' page (paragraph 3.3.3).
 - Event type: taken from the recording triggering information defined in the 'Waveform capture' subtab on the 'Configuration' page (paragraph 3.3.3).
 - No. of cycles: Cumulative value of the number of cycles of n milliseconds.

5.3.2.2 'Download waveform summary' and 'Cancel summary' buttons

The Download waveform summary' button enables all the waveforms stored in the device to be simultaneously downloaded onto the PC and and refreshes the tabular display.

Translator's workbe Relève toutes les formes ondes

Arrêt de la Relève

The message 'Data being read' is displayed for the entire duration of the download.

The 'Cancel download' button is accessible only during the download of all waveforms onto the PC. It enables the download to be cancelled leaving things as they stand.

5.3.3 'Waveform' sub-tab

- The data displayed correspond to a readout of the values associated with events downloaded from the device, each event being displayed in its own sub-tab. The numerical values of the electrical quantities correspond to their instantaneous values (1 second values).
- □ This sub-tab is visible only wfrom the moment when the download has started until at least one event has been created in the 'Closing events' or 'Waveform table' sub-tabs.
- □ The maximum number of sub-tabs that can be created is 16.

antanée Courbes nements	s d'enregist clôturés	rennes Maximu trements Tableau forme d'on	m Minimum C Courbe de charge de Forme(s) d'onde(s	ompteurs Entré Qualimétrie s)	e analogiqu e stat. EN50	Je THD & Harmoniques 1160 Qualimétrie	Journal des al évènements V - U
2052111	1_2013010	1628	162892KH	CH 20130105145	825 7	5145025_9	
Coupu	re très brèv	e avec creux préala	ble			Type d'évènement	
05/01.	/2013 14:5	8:25.908	Date de début	0:00:00.95	Э	Durée (ms)	
64	Nombre	e de Points par c	ycle		48	Nombre de cycles	
	Num	Delta T (ms)	lv1 M	V2 M	[V3 M	[11 (A)	A
	0	0.000	-277.69	-277.34	-275.37	.0.0119	
	1	0.312	-259.71	-257.05	-254.62	0.0040	
	2	0,312	-237,26	-235,07	-233,13	0,0040	
	3	0,312	-208,24	-207,74	-209,35	5 -0,0013	
	4	0,312	-181,97	-182,02	-179,11	0,0066	
	5	0,312	-152,09	-150,62	-147,61	0,0066	
	6	0,312	-119,04	-117,51	-116,69	0,0040	
	7	0,312	-83,03	-83,44	-81,06	-0,0145	
	8	0,312	-50,26	-48,15	-46,23	-0,0066	
	9	0,312	-13,80	-12,27	-10,69	-0,0040	
	10	0,312	15,31	16,97	18,42	0,0040	
	11	0,312	48,25	48,13	48,19	0,0013	
	12	0,312	77,55	78,90	81,45	-0,0119	
	13	0,312	103,82	105,27	106,71	-0,0040	
	14	0,312	133,01	134,15	135,49	-0,0092	
	15	0,312	165,42	162,97	163,09	-0,0198	
	16	0.312	192.49	192.14	192.55	3300.0	

Figure 5-3: Example of 'EN50160 statistics' sub-tab display



5.3.3.1 Upper part of the display

162892KKH_20130105145825_7						
Coupure très brève avec creux pré	alable		Type d'évènement			
05/01/2013 14:58:25.908	Date de début	0:00:00.959	Durée (ms)			
64 Nombre de Points par cycle		48	Nombre de cycles			

The upper part of the display is composed of the title area (in bold) and an area containing five numeric fields.

The information contained in the numeric fields are a copy of the information about the event (type, timestamp, duration, number of cycles) taken from the 'Waveform table' tab, (paragraph 5.3.2)

Clicking on the ¹² button closes the display.

5.3.3.2 Interpreting the table

- □ The table is interpreted as follows:
 - Num: Number of point measurements. The example given on the previous page shows each cycle consisting of 64 points, corresponding to a total of 3,072 lines of measurements shown in the table.
 - Delta (ms): Time interval between two measurents, in millseconds.
 - V1, V2, V3, I1: summary of the instantaneous values (1s) for the variable concerned, in accordance with the selected quantities in the 'Waveform capture' sub-tab (paragraph 3.3.3)

5.3.3.3 'Save As' button

A click on the 'Save As' button opens a window for saving the table in one of the formats (xls or csv suggested.

Enregistrer sous ...



The xls format is readable only by an application compatible with Microsoft Excel. the csv format is readable by any application reading this kind of formatting; data items are separated by a comma).



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