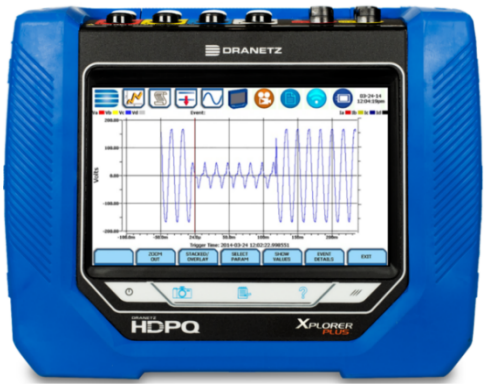
DRANETZ®
GMC-INSTRUMENTS GROUP

DRANETZ HDPQ®

XPLORER PLUS
GUIDE PLUS
VISA PLUS



User Guide

For the following products:
Dranetz HDPQ Xplorer / Xplorer 400 / Guide / Visa
Dranetz HDPQ Xplorer Plus / Xplorer 400 Plus / Guide Plus / Visa Plus

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WARNING

Death, serious injury, or fire hazard could result from improper connection of this instrument. Read and understand this manual before connecting this instrument. Follow all installation and operating instructions while using this instrument.

Connection of this instrument must be performed in compliance with the National Electrical Code (ANSI/NFPA 70-2023) of USA and any additional safety requirements applicable to your installation.

Installation, operation, and maintenance of this instrument must be performed by qualified personnel only. The National Electrical Code defines a qualified person as “one who has the skills and knowledge related to the construction and operation of the electrical equipment and installations, and who has received safety training on the hazards involved.”

Qualified personnel who work on or near exposed energized electrical conductors must follow applicable safety related work practices and procedures including appropriate personal protective equipment in compliance with the Standard for Electrical Safety Requirements for Employee Workplaces (ANSI/NFPA 70E-2024) of USA and any additional workplace safety requirements applicable to your installation.

ADVERTENCIA

Una conexión incorrecta de este instrumento puede producir la muerte, lesiones graves y riesgo de incendio. Lea y entienda este manual antes de conectar. Observe todas las instrucciones de instalación y operación durante el uso de este instrumento.

La conexión de este instrumento a un sistema eléctrico se debe realizar en conformidad con el Código Eléctrico Nacional (ANSI/NFPA 70-2023) de los E.E.U.U., además de cualquier otra norma de seguridad correspondiente a su establecimiento.

La instalación, operación y mantenimiento de este instrumento debe ser realizada por personal calificado solamente. El Código Eléctrico Nacional define a una persona calificada como "una que esté familiarizada con la construcción y operación del equipo y con los riesgos involucrados."

El personal cualificado que trabaja encendido o acerca a los conductores eléctricos energizados expuestos debe seguir prácticas y procedimientos relacionados seguridad aplicable del trabajo incluyendo el equipo protector

personal apropiado en conformidad con el estándar para los requisitos de seguridad eléctricos para los lugares de trabajo del empleado (ANSI/NFPA 70E-2024) de los E.E.U.U. y cualquier requisito de seguridad adicional del lugar de trabajo aplicable a su instalación.

AVERTISSEMENT

Si l'instrument est mal connecté, la mort, des blessures graves, ou un danger d'incendie peuvent s'en suivre. Lisez attentivement ce manuel avant de connecter l'instrument. Lorsque vous utilisez l'instrument, suivez toutes les instructions d'installation et de service.

Cet instrument doit être connecté conformément au National Electrical Code (ANSI/NFPA 70-2023) des Etats-Unis et à toutes les exigences de sécurité applicables à votre installation.

Cet instrument doit être installé, utilisé et entretenu uniquement par un personnel qualifié. Selon le National Electrical Code, une personne est qualifiée si "elle connaît bien la construction et l'utilisation de l'équipement, ainsi que les dangers que cela implique".

Le personnel qualifié qui travaillent dessus ou s'approchent des conducteurs électriques activés exposés doit suivre des pratiques en matière et des procédures reliées par sûreté applicable de travail comprenant le matériel de protection personnel approprié conformément à la norme pour des conditions de sûreté électriques pour les lieux de travail des employés (ANSI/NFPA 70E-2024) des Etats-Unis et toutes les conditions de sûreté additionnelles de lieu de travail applicables à votre installation.

Safety Summary

Read and follow these instructions carefully and completely in order to ensure safe and proper use.

The instructions must be made available to all persons who use the instrument.

Keep for future reference.

If the equipment is used in a manner not specified in this user guide, the protection provided by the equipment may be impaired. These safety precautions are repeated where appropriate throughout this manual.

General

- Installation, operation, and maintenance of this instrument must be performed by qualified personnel only and has received safety training on the hazards involved.
- Observe and comply with all safety regulations which are applicable to your work environment.
- Wear suitable and appropriate personal protective equipment (PPE) whenever working with the instrument.
- The functioning of active medical devices (for example pacemakers, defibrillators) and passive medical devices may be affected by voltages, currents and electromagnetic fields generated by the tester and the health of their users may be impaired. Implement corresponding protective measures in consultation with the manufacturer of the medical device and your physician. If any potential risk cannot be ruled out, do not use the instrument.

Accessories

- Use only the specified accessories (included in the scope of delivery or listed as options) with the instrument.
- Carefully and completely read and adhere to the product documentation for optional accessories. Retain these documents for future reference.

Handling

- Before each use, inspect the instrument and all cables for breaks or cracks in the insulation. Replace immediately if defective.
- Use the accessories and all cables in undamaged condition only. Inspect accessories and all cables before use. Pay particular attention to damage, interrupted insulation or kinked cables.
- If the instrument or its accessories don’t function flawlessly, permanently remove the instrument/accessories from operation and secure them against inadvertent use.

- If the instrument or accessories are damaged during use, for example if they're dropped, permanently remove the instrument/accessories from operation and secure them against inadvertent use.
- If there are any signs of interior damage to the instrument or accessories (e.g. loose parts in the housing), permanently remove the instrument/accessories from operation and secure them against inadvertent use.
- The instrument and the accessories may only be used for the tests/measurements described in the documentation for the instrument.
- The instruments and accessories of Dranetz are designed such as to ensure optimum compatibility with Dranetz products that are expressly provided for them. Unless otherwise expressly confirmed in writing by Dranetz, they are not intended and suited for use with other products.
- Route cables in an orderly fashion. Loose, disorderly cables result in unnecessary danger of tripping and falling.

Operating Conditions

- Do not use the instrument and its accessories after long periods of storage under unfavorable conditions (e.g. humidity, dust or extreme temperature).
- Do not use the instrument and its accessories after extraordinary stressing due to transport.
- Do not expose the instrument to direct sunlight.
- Only use the instrument and its accessories within the limits of the specified technical data and conditions (ambient conditions, IP protection code, measuring category etc.).
- Do not use the instrument in potentially explosive atmospheres. Danger of explosion!
- Do not use the instrument in atmospheres subject to fire hazard. Danger of fire

Rechargeable or regular batteries

- Use batteries in undamaged condition only. Risk of explosion and fire in the case of damaged batteries! Inspect the batteries before use. Pay particular attention to leaky and damaged batteries.
- When using (rechargeable) batteries, the respective test/measuring instrument may only be used with inserted and secured battery compartment lid. Otherwise, dangerous voltages may occur at the battery contacts under certain circumstances.
- Only charge undamaged batteries. Risk of explosion

and fire in the case of damaged rechargeable batteries! Inspect the batteries before use. Pay particular attention to leaky and damaged batteries.

Measurement Cables and Making Connections

- Plugging in the measurement cables must not necessitate any undue force.
- Never touch conductive ends.
- Fully unroll all measurement cables before starting a test/measurement. Never perform a test/measurement with the measurement cable rolled up.
- Connect the safety (earth) ground first, before making any other connections.
- When connecting to electric circuits or pulse initiating equipment, open their related breakers. DO NOT install any connection of the instrument on live power lines.
- Connections must be made to the instrument first, then connect to the circuit to be monitored.
- Hands, shoes and floor must be dry when making any connection to a power line.
- Make sure the instrument is turned OFF before connecting probes to the rear panel.

Data Security

- Always create a backup copy of your measurement/test data.
- The device is equipped with a data memory to which personal and/or sensitive data can be stored. Observe and comply with the applicable national data protection regulations. Use the corresponding functions provided by the test instrument (such as access protection), as well as other appropriate measures to prevent unauthorized access to the data.
- Protect the device against unauthorized tampering. Use appropriate measures (e.g. restricting physical access to the instrument).

Definitions of Safety Statement Levels in this Document

WARNING statements inform the user that certain conditions or practices could result in loss of life or physical harm.

CAUTION statements identify conditions or practices that could harm the instrument, its data, other equipment, or property.

NOTE statements call attention to specific information.

NOTE - Safety Related References:
The references below are examples only. Make sure to follow the local safety and work requirements in your country and environment.

- Qualified personnel: In the USA, the National Electrical Code defines a qualified person as “one who has the skills and knowledge related to the construction and operation of the electrical equipment and installations, and who has received safety training on the hazards involved.”
- Safe work practices: Qualified personnel who work on or near exposed energized electrical conductors must follow applicable safety related work practices and procedures including appropriate personal protective equipment in compliance with the USA Standard for Electrical Safety Requirements for Employee Workplaces (ANSI/NFPA 70E-2024) of USA and any additional workplace safety requirements applicable to your installation

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INTRODUCTION

Intended Use / Use for Intended Purpose

The Dranetz HDPQ® Xplorer Plus, Xplorer 400 Plus, Guide Plus and Visa Plus are portable, hand-held, eight-channel power quality meter/monitors which are very similar in operation, although the Xplorer Plus also has a high-speed sampling board for capturing the details of very fast transients. The Dranetz HDPQ Plus family supersedes the Dranetz HDPQ family and this guide applies to both product families. The features common to all monitors are covered in this document, and the Xplorer Plus name will be used to represent all four instruments unless otherwise noted. These cutting-edge power quality instruments are designed with a 7" WVGA wide screen LCD, using touch screen technology. They can monitor, record and display data on four voltage channels, as well as four current channels simultaneously.

The Xplorer Plus is designed to meet both the IEEE 1159 and IEC 61000-4-30 Class A standards for accuracy and measurement requirements. It can do PQ-optimized acquisition of power quality related disturbances and events. It is designed with a statistical package called Quality of Supply (QOS), with monitoring and setup protocols set to determine voltage measurement compliance required for EN50160 monitoring. European standard EN50160 requires that measurement parameters must be within a specified percentage for 95% of the time.

The Xplorer Plus also allows you to perform automatic setup or to customize threshold settings for power quality or energy/demand. The power quality and energy/demand dashboard interface help you monitor and manage energy consumption including utility costs.

The Xplorer Plus firmware can monitor power quality and energy/demand phenomena for troubleshooting and/or compliance purposes. It can record inrush conditions, carry out long-term statistical studies to establish performance baselines, and perform field-based equipment testing and evaluation for commissioning and maintenance. The firmware integrates an intuitive instrument setup procedure to ensure the capture of all relevant data for additional post process analysis, report writing, and data archiving using other compatible Dranetz software applications such as Dran-View®.

Use for Other than Intended Purpose

Using the instrument for any purposes other than those described in this guide is contrary to use for intended purpose. Use for purposes other than those intended may result in unforeseeable damage!

GETTING STARTED

IMPORTANT NOTICE

- **Charge Battery Before Use**
  Always charge the battery fully before using the instrument!
  The instrument will fully charge its internal battery in three (3) hours.

  The instrument will always operate on the charger and is designed to do so regardless of the state of charge of the battery.

  Refer to the User Guide for additional information.

- **Set Time and Date**
  From the Home screen, press the Setup Instrument () icon, then press Set Time and Date.

  Set the time zone applicable to your application using the Time Zone drop down selection list.

  NOTE: Time and/or date cannot be changed if monitoring is on.

  The Xplorer Plus also lets you synchronize time, so that all of your devices are using the same time for data recording. Time sync options include GPS, NTP or Real Time Clock (RTC). Each Time Sync Source button toggles the respective source enabled or disabled.

  If all three are enabled, time sync is sourced by the instrument in the following priority order: If GPS is available, then it is used. If not and NTP is available, then NTP is used. If neither GPS nor NTP is available, then RTC is used.

  NOTE: If the battery is removed and only RTC time is available, the instrument reverts to the default time/date.

Connecting to AC Power Source

Power Specifications The Xplorer Plus AC adapter can be power by a 50/60 Hz, 90-264V AC power input source.

CAUTION **Always set the power switch to the off position before connecting or disconnecting the input power cable.**

Operation of the Xplorer Plus from an AC voltage source other than the rated voltage input stated on the instrument nameplate can cause damage to the instrument.

PRECAUCION **Siempre fije el interruptor de encendido en la posición apagada antes de conectar o desconectar el cable de energía de entrada.**

La operación del Xplorer Plus desde una fuente de voltaje de ca que no sea la entrada de voltaje nominal indicada en la placa de identificación de la unidad puede causar daños a la unidad.

MISE EN **Mettez toujours l'interrupteur dans la position GARDE ouverte avant de connecter ou de déconnecter le câble d'alimentation primaire.**

Mettez toujours l'interrupteur dans la position ouverte avant de connecter ou de déconnecter le câble d'alimentation primaire.

AC Power Source

The Xplorer Plus can be operated from a 50/60 Hz, 120/240V AC power source with or without the battery pack installed.

- Voltage range, 120/240V AC
- Frequency, 50/60 Hz
- Power consumption, 20W

STEP 1

Connect the AC adapter/battery charger plug into the left side of the instrument.

STEP 2

Plug the AC adapter into an AC power source.

STEP 3

Press the momentary On/Off power switch to turn the instrument on.

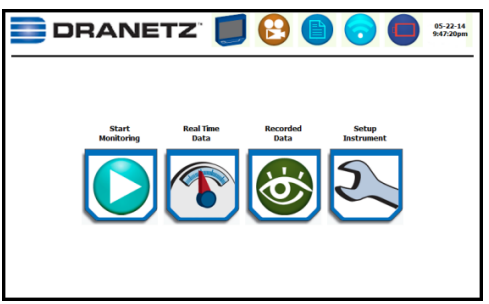
Result: The Dranetz logo will be displayed while the instrument is booting.

STEP 4

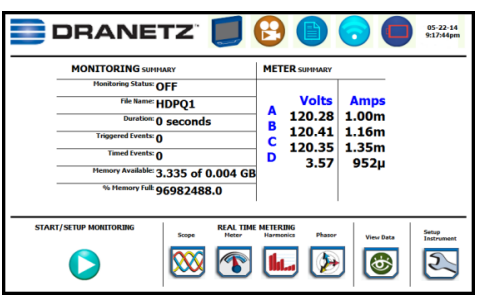
The instrument completes the power on sequence. If the instrument was shut down while monitoring, the instrument will resume monitoring upon power up.

Result: Upon start-up, the Home screen serves as the access point for major instrument control functionalities.

Home Screen: The Home screen displays large shortcut buttons to include Start Monitoring, Real Time Data, Recorded Data and Instrument Setup. Repeated pressing of the Dranetz logo alternates between the Home screen and the Home Monitoring screen.



Home Monitoring Screen: After the instrument has been powered up and monitoring is turned ON, the Home Monitoring screen becomes the start-up page. This is the screen from which all other functions launch and eventually return back to using the Exit function key.



Controls, Indicators and Connectors

Top View

Voltage and Current Connections - There are four differential voltage and four differential current channels, which can be wired to measure a variety of circuit configurations. Use only Dranetz voltage leads and current probes for proper operation. Do not exceed the marked maximum ratings.

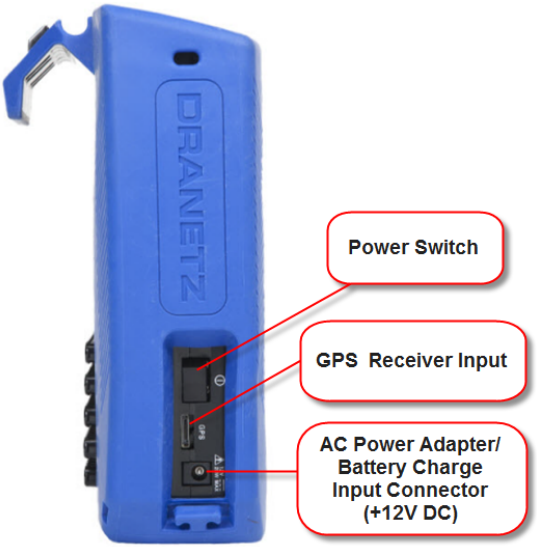
Front View

Color LCD with Touch Screen – the color LCD has an integral touch screen that is used to select functions for setups, real time meters, and viewing stored data. The color LCD touch screen is operable using the finger and/or a stylus. The touch screen display permits menu selection and alphanumeric data entry. Clean only with a soft cloth.

Power Indicator - LED will light steadily when the instrument is operating normally.

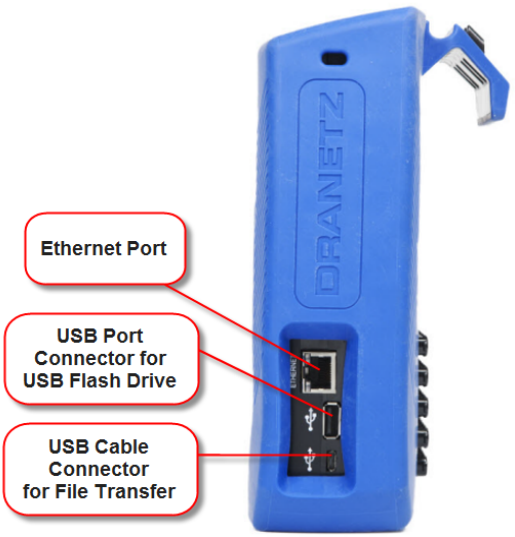
Three Button Icons - used to perform various functions i.e. take a Snapshot of the active screen, capture Mini-Reports and access Help screens. These buttons cannot be activated with gloves on, as they employ capacitive or touch technology.

Left Side View



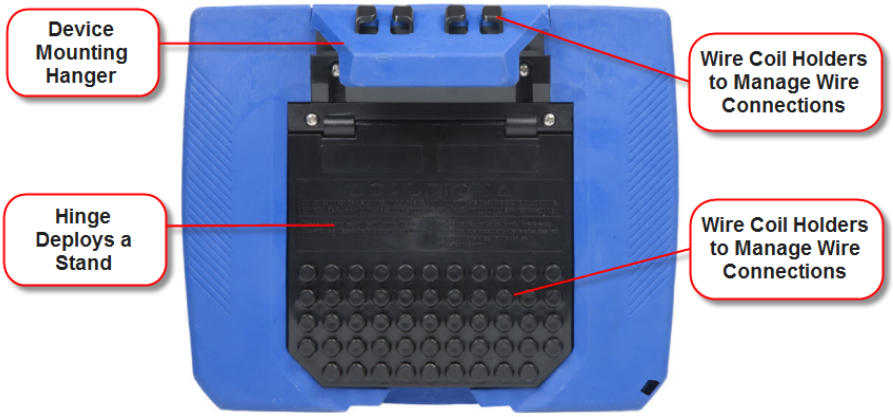
Left Side Panel - contains the power switch, GPS receiver port, and AC adapter input connector.

Right Side View



Right Side Panel - contains the ethernet port and two USB port connectors for the USB flash drive, as well as the USB cable for plug & play file transfer directly to a computer.

Rear View



Rear Panel - shows the device mounting hanger located on top if you want to hang the instrument on a panel, wire coil holders to manage wire connections, and the hinge which deploys a stand. The stand also has features to hold the measurement wiring.

Field Replaceable Battery Pack – the internal UPS feature requires that the internal batteries be properly charged and maintained. If the battery pack needs replacement, de-energize the connections and power to the instrument before opening the battery door. Replace the pack only with the Dranetz battery pack P/N BP-HDPQ.

MAKING CONNECTIONS

WARNING

Death, serious injury, or fire hazard could result from improper connection of this instrument. Read and understand the warnings in the beginning of this manual before connecting this instrument.

WARNING

Connection of this instrument must be performed in compliance with the National Electrical Code (ANSI/NFPA 70-2023) of USA and any additional safety requirements applicable to your installation.

ADVERTENCIA

Una conexión incorrecta de este instrumento puede producir la muerte, lesiones graves y riesgo de incendio. Lea y entienda este manual antes de conectar. Observe todas las instrucciones de instalación y operación durante el uso de este instrumento.

ADVERTENCIA

La conexión de este instrumento a un sistema eléctrico se debe realizar en conformidad con el Código Eléctrico Nacional (ANSI/NFPA 70-2023) de los E.E.U.U., además de cualquier otra norma de seguridad correspondiente a su establecimiento.

AVERTISSEMENT

Si l'instrument est mal connecté, la mort, des blessures graves, ou un danger d'incendie peuvent s'en suivre. Lisez attentivement ce manuel avant de connecter l'instrument. Lorsque vous utilisez l'instrument, suivez toutes les instructions d'installation et de service.

AVERTISSEMENT

Cet instrument doit être connecté conformément au National Electrical Code (ANSI/NFPA 70-2023) des Etats-Unis et à toutes les exigences de sécurité applicables à votre installation.

Connecting Voltage Measurement Cables

Measurement Cable Set

Description: Color coded voltage measurement cables are provided as standard accessories and are stored in a cable pouch as part of the measurement cable set, P/N VSC-HDPQ. Each cable set consists of a cable and an alligator clip. Color coded wire markers are also included for use with current probes.

Voltage Rating: Direct connection of voltage measurement cables to the circuit are rated at 1000 VCAT III Vrms max. For measuring voltages greater than 1000 Vrms, potential transformers (PTs) must be used.

Interconnect Jumpers

The standard cable set for the HDPQ includes four (4) interconnect jumpers bearing part number 114013-G1. These interconnect jumpers can be used to connect the same conductor points together and are rated 600V CAT III. When using the interconnect jumpers, also use the supplied wire markers to identify the wiring connections applicable to your installation.

WARNINGS
DO NOT EXCEED 600 VRMS when using Dranetz P/N 114013-G1 interconnect jumpers.

For circuit configurations above 600VRMS, each voltage channel input is to be individually connected to the HDPQ instrument with the supplied 1000V CAT III cables and safety clips ONLY.

Optional Fused Voltage Leads

Optional fused voltage leads are available as individual colored leads or in a complete colored fused voltage cable set (part #: COLORED-FUSED-LEAD-SET) These fuse voltage adapters are rated up to 1000V AC/DC applications.

Optional Fused Voltage Lead

- **WARNING:** To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.
- **WARNING**: To reduce the risk of fire, electrical shock, or physical injury, it is strongly recommended to fuse the voltage measurement inputs. Fuses must be located as close to circuit connection as possible to maximize protection.
- **WARNING**: For continued protection against risk of fire or shock hazard, replace only with same type and rating of recommended fuse.
- **WARNING**: Do not replace fuse again if failure is repeated. Repeated failure indicates a defective condition that will not clear with replacement of the fuse. Refer condition to a qualified technician.

The Xplorer Plus can monitor the following power configurations:

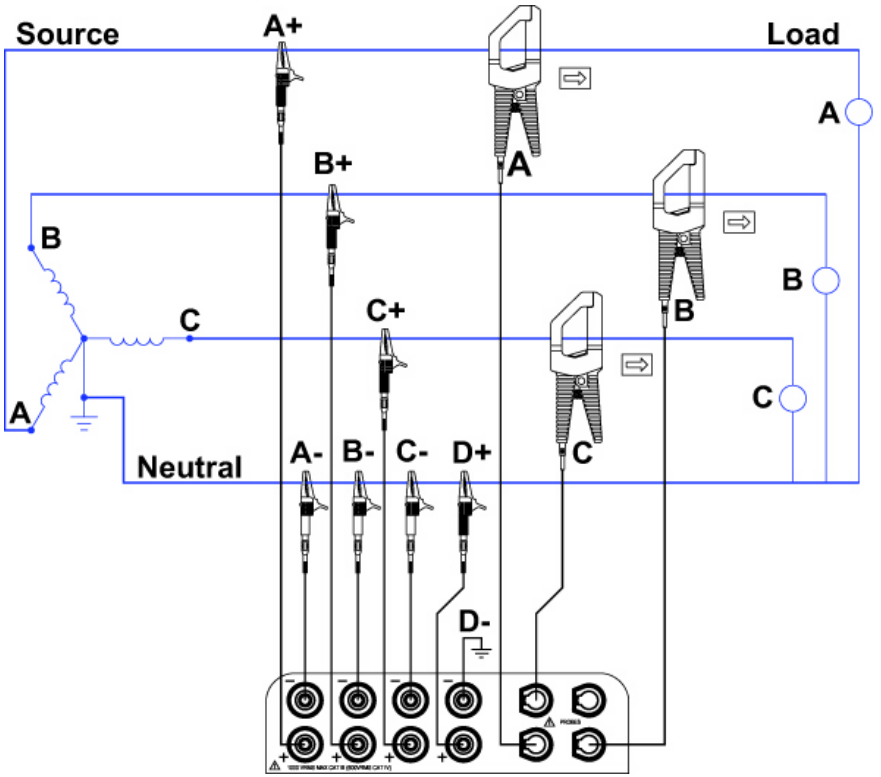
- Single Phase
- Split Phase
- 3 Phase, Four Wire Wye
- 3 Phase (Floating or Grounded) Delta
- 3 Phase 2-Watt Delta
- Generic Circuit
- 2 ½ Element without Vb
- 2 ½ Element without Vc

3 Phase, Four Wire Wye and 3 Phase (Floating or Grounded) Delta are described in this guide.

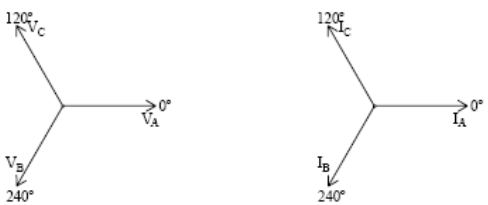
3 Phase, Four Wire Wye

Channels A, B, and C are connected to voltage and current probes. The neutral is connected to common and is the reference for the three channels. The figure also shows voltage connection using channel D as a differential input for measuring neutral to

ground voltage. Neutral to ground measurements are important, but optional.



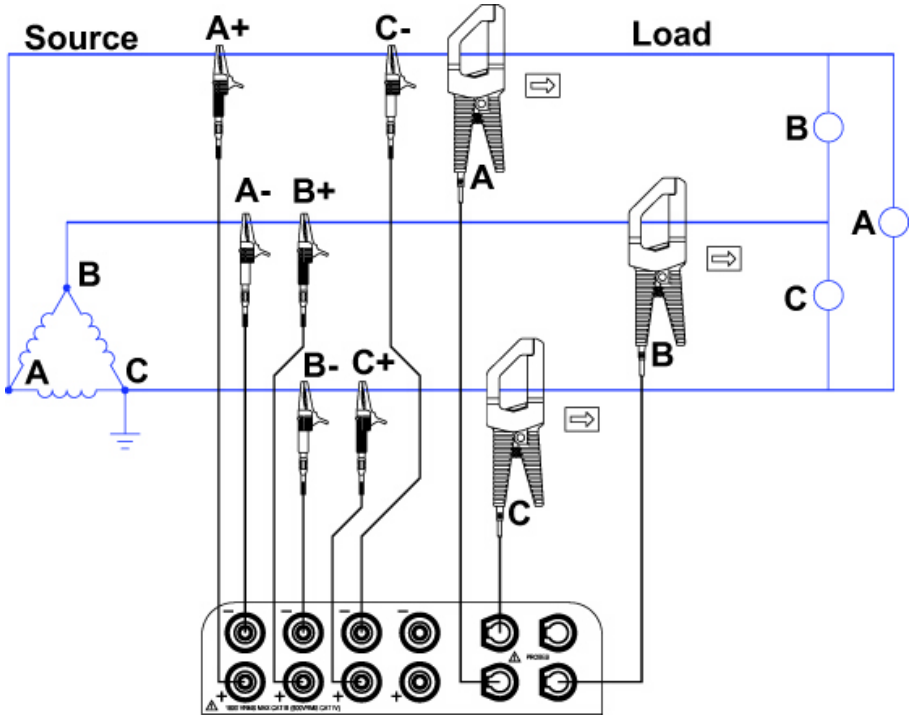
Phasor diagrams



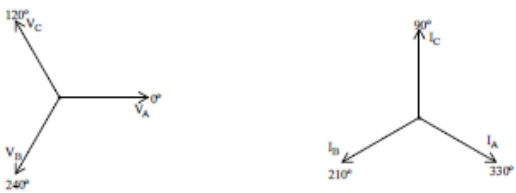
3 Phase (Floating or Grounded) Delta

In this power connection, the Xplorer Plus uses voltage channels A, B, and C as differential inputs with channel A using source voltage A-B, channel B using B-C, and channel C using C-A as

the reference. Current probes are connected to channels A, B, and C. Neutral to ground measurements are important, but optional.



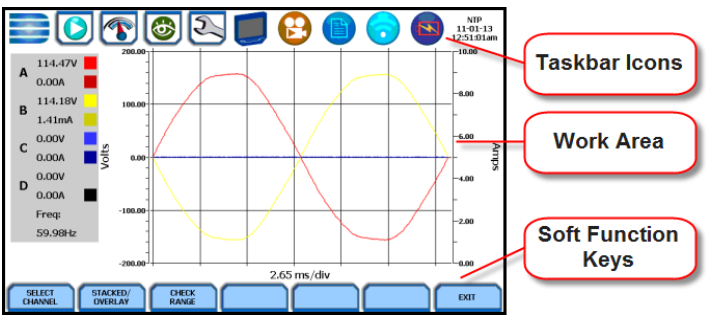
Floating Delta phasor diagrams



XPLORER PLUS UI TOUCHSCREEN FEATURES

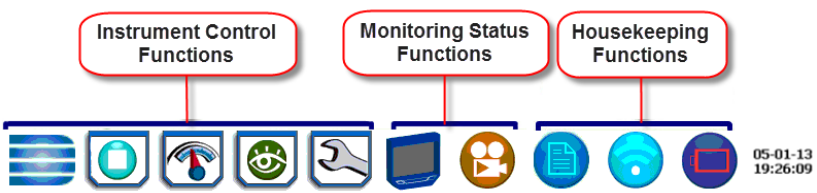
All Dranetz HDPQ Xplorer Plus screen functions are operable using the color LCD touch screen display. Use your finger and/or a stylus to apply light pressure to the LCD screen to initiate touch screen recognition. The touch screen display is also workable with lineman gloves on. In order to reduce power consumption, the backlight of the LCD screen times-out after a specified programmable time of no user activity. The backlight reactivates by touching any part of the screen.

Sample touchscreen working area window shown below:



Taskbar Icons

The Taskbar features interactive icon graphics located at the top of the user interface. These icons are used as shortcuts to common instrument functions, and generally divided into three areas - Instrument Control Functions, Monitoring Status Functions and Housekeeping Functions. The current date and time is also featured on the rightmost side. The taskbar is generally used to navigate between different operations of the instrument.



Work Area with Soft Function Keys

Each displayable function will appear in the work window. The work window displays the selected data, function, control, etc.

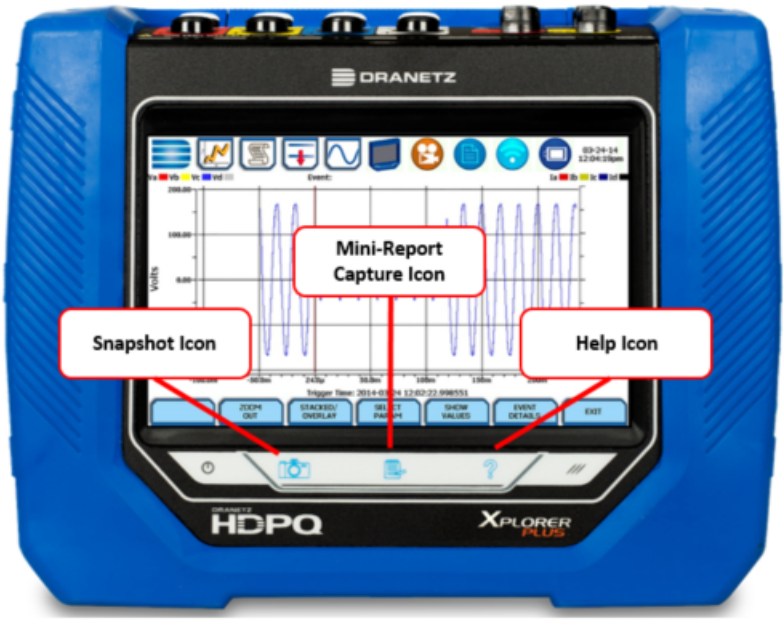
Depending on the data function on display, the work window may show soft function keys, the definitions of which can change based on the

context of the screen. These soft keys are generally used to access sub-menus or pop-up screens as part of the operation of the active screen, such as zoom in/out, data entry, etc. The Exit or Done key typically closes the present viewing screen and returns to the previous screen.

XPLORER PLUS TOUCH ICON BUTTONS

Touch Icon Buttons

There are three touch icon buttons located below the LCD screen - Snapshot, Mini-Report Capture and Help. The buttons allow you to perform functions specific to the screen on display, as described below:



Snapshot Icon Button

This button takes a snap shot image of the current screen. The image is saved to a mini-report if one is open. If no report is open, the image is saved to internal memory.

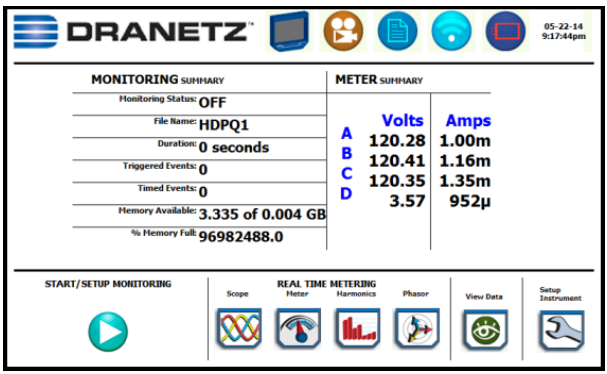
Mini-Report Capture Icon Button

This button opens or closes a mini report. The first time this button is pressed, a new report may be opened. You can then enter a report name and choose a template. The second time it is pressed, the report can be closed and saved.

Help Icon Button
This button allows you to access instant on screen Help. It is context sensitive, in that it displays the pertinent Help information based on the active screen.

XPLORER PLUS HOME MONITORING PAGE

After the instrument has been powered up and monitoring is turned ON (and subsequently if monitoring is DONE), the Home Monitoring screen becomes the start-up page.



The Home Monitoring screen allows you to view monitoring status and setups as configured. The taskbar located on top of the screen features shortcuts to common instrument functions.

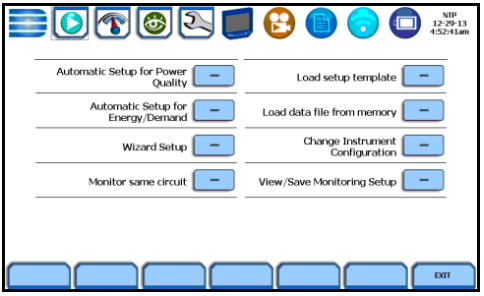
The monitoring summary includes:

- Monitoring Status - On or Off
- File Name - user specified or HDPQxx, where xx increments every time data is saved using the same file name
- Duration – length of time from the start of monitoring to the present time while monitoring is on
- Triggered Events – counts the number of events saved to memory
- Timed Events - counts the number of timed readings recorded
- Memory Available - remaining free space in GB in memory device
- % Memory Full - percentage of used space in internal memory of 4GB

Icons to display the Start menu, access real time meters, view recorded data and set up instrument are found at the bottom of the screen.

SETUP MONITORING

The Start Monitoring icon takes you to the next page to begin setup monitoring.



There are two ways to set up the instrument for monitoring - via Automatic Setup or Wizard Setup. Experienced users can turn on any available parameter and set threshold limits to any value within the acceptable range. The length of time to monitor a circuit can vary from a few hours to a few months or more depending on the user application.

Automatic Setup automatically configures the instrument's circuit type, voltage and current channels, and parameter thresholds. The auto-configured setup enables you to proceed directly with data monitoring. The Xplorer Plus allows you to perform automatic setup for power quality or for energy/demand, depending on your application.

Wizard Setup takes you through a series of screens prompting for information about the circuit to be monitored and the monitoring settings. The instrument turns on the appropriate voltage and current channels when you select a circuit type. Parameter thresholds are initially set based on the line voltage and current values that you enter. Threshold limits for capturing events are also set according to the monitoring mode selected. Selection of a setup mode typically depends on the user's application and extent of familiarity with the operation of the instrument.

Monitor Same Circuit makes use of the previous setup for monitoring.

Load Setup Template allows you to load previously saved setup templates from internal memory or from an external USB device.

Load Data File from Memory brings up a list of recorded session data files containing recordings that are saved to memory while monitoring is on.

Change Instrument Configuration brings up the instrument settings menu to help you manage the instrument according to your setup preferences and application. Refer to Section - Instrument Settings.

View/Save Monitoring Setup displays the list of parameter settings for application setup.

Measurement Connections

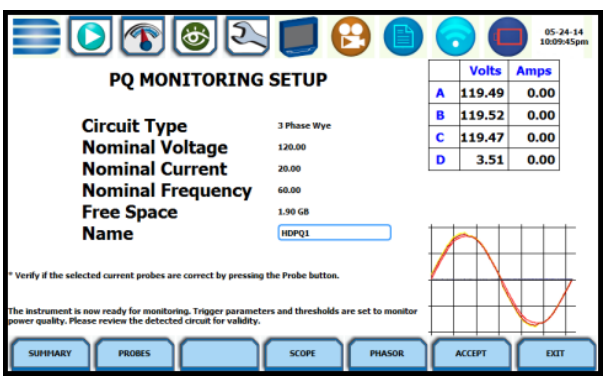
The Xplorer Plus can monitor the following power configurations:

- Single phase
- Split phase
- 3 Phase Delta
- 3 Phase Wye
- 3 Phase 2-Wattmeter Delta
- Generic
- 2 ½ Element without Vb
- 2 ½ Element without Vc

While monitoring any of the above configurations, the Xplorer Plus can also be connected to monitor neutral to ground voltage, and neutral or ground current.

Automatic Setup for Power Quality

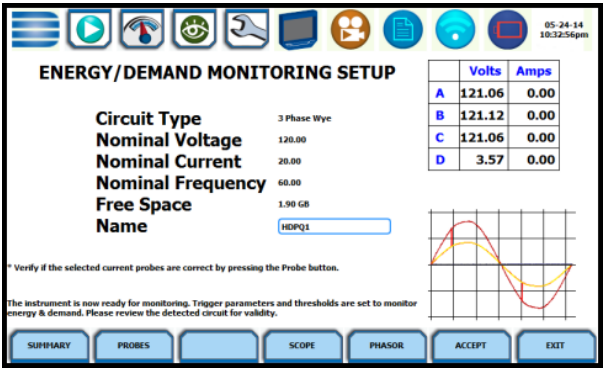
Automatically configures the setup for monitoring quality of supply based on IEEE and IEC typical trigger settings. Automatic Setup is a one-stop process using pre-defined values to set up the instrument automatically. You have the option to view the summary list of parameter settings, change probe types, and/or proceed directly with data monitoring.



From the Start Menu, press Automatic Setup for Power Quality. The auto-configured circuit type, nominal voltage, current and frequency values appear on screen. The remaining free space in GB is shown, and you can specify the name in which the PQ setup file can be saved.

Automatic Setup for Energy/Demand

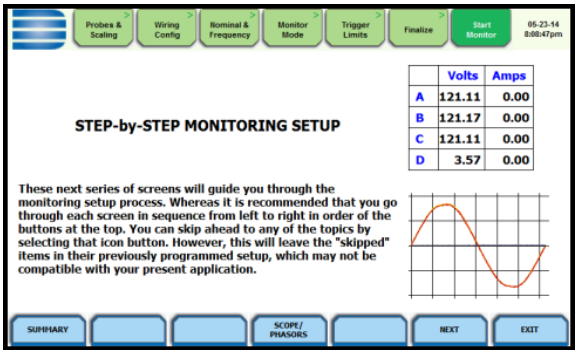
Automatically configures the setup for monitoring energy/demand. Automatic Setup is a one-stop process using pre-defined values to set the instrument automatically. You have the option to view the summary list of parameter settings, change probe types, and/or proceed directly with data monitoring.



From the Start Menu, press Automatic Setup for Energy/Demand. The auto-configured circuit type, nominal voltage, current and frequency values appear on screen. The remaining free space in GB is shown, and you have the ability to specify the name in which the Energy/Demand setup file can be saved.

Wizard Setup

Wizard Setup guides you through the circuit setup step-by-step, via a series of screens prompting for information about the circuit to be monitored. The instrument automatically turns on the correct channels, sets the parameter thresholds and waveform capture settings depending on the detected circuit type, nominal voltage and current values, and monitoring mode specified. The user can then modify these settings if necessary.



From the Start Menu, press Wizard Setup. You can go through the monitoring setup step-by-step by clicking on the Next function key, or you can skip ahead and select the menu tab on top of the screen that you want to change/view. Note that any setup menu you skip remains configured using the auto-programmed or previous settings, which may not be compatible with your present application. Or if you return to a menu with an existing setup and then skip ahead, all menu settings, which may have been modified from the initial setup, will remain.

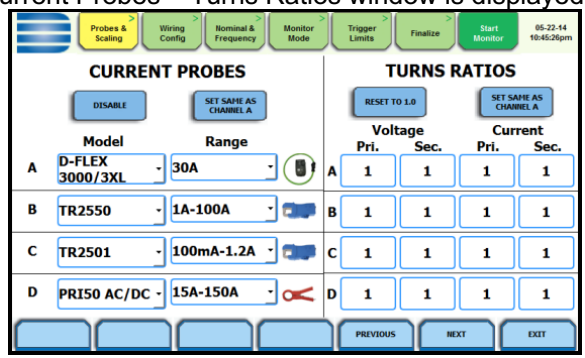
The screens shown below follow the sequence by which they appear when in the Wizard Setup.

Input Configuration

Current probe types (if used), turns ratios (when using additional PTs and/or CTs), circuit configuration (single phase, wye, delta, etc.), and the nominal voltage, current and frequency tracking range are set up first before selecting the monitoring mode.

Current Probe / Turns Ratios Setup

Press the Probes & Scaling tab, or from the Wizard Setup screen press Next. The Current Probes – Turns Ratios window is displayed.

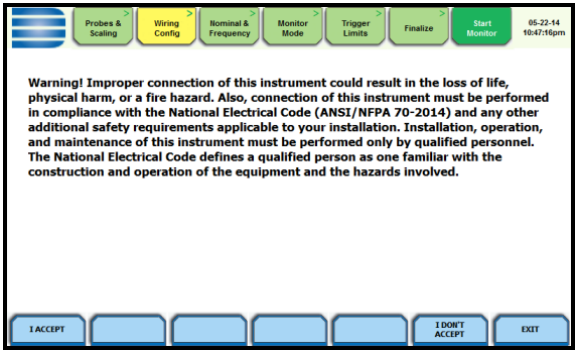


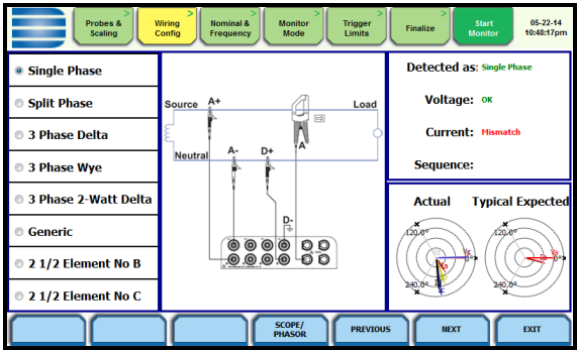
Circuit Type Selection

The Xplorer can display wiring diagrams from which you can select the circuit type appropriate to your application. The instrument will automatically select and display the detected circuit type when entering the screen, and compare the detected voltages, currents, and phase sequence (if applicable) to the selected circuit type.

Press the Wiring Config tab, or from the Current Probes – Turns Ratios screen, press Next. Read the Warning advisory, then press I Accept to display the menu for circuit selection.

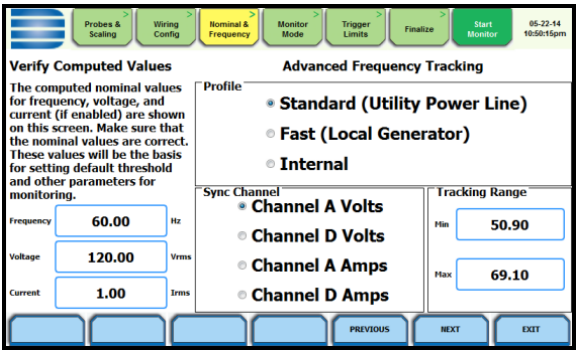
An auto circuit detection window is displayed to select the detected circuit type, nominal voltage, current and frequency. Parameters that match expected measurements are displayed in green. Ones that do not match are displayed in red.





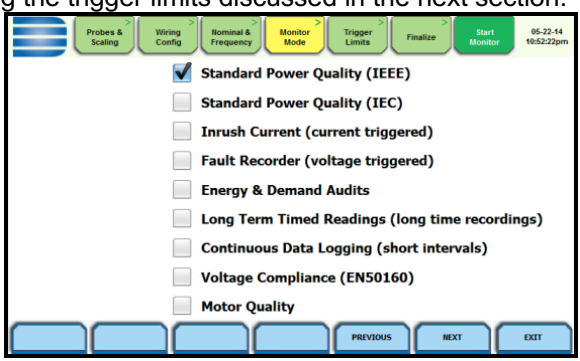
Frequency, Voltage and Current Settings

The Nominal Values screen allows you to select frequency sync options, including channel source (Va, Vd, Ia, Id), speed of response (Standard - Utility Power Line, Fast - Local Generator or Internal), and frequency sync min/max range.



Monitoring Modes

The Xplorer Plus provides nine (seven on the Visa Plus) monitoring modes of operation from which to monitor and capture data relevant to the user's application. Selecting any setup category automatically sets trigger and capture conditions. Advanced users are free to mix and match settings using the trigger limits discussed in the next section.



The Xplorer Plus allows you to monitor events in the following setup categories:

Standard Power Quality (IEEE/IEC): Xplorer Plus algorithms automatically evaluate existing rms and waveform conditions to optimize setups to reliably capture data. This feature ensures that the first-time

user gets the expected results, while providing the experienced user with the ability to tweak settings for specific applications. Either way, the necessary data used to identify critical events and optimize mitigation solutions is recorded.

Current Inrush: Determining system characteristics during current inrush conditions such as impedance changes during motor energization or the I^2t curve of a breaker trip is key to preventative maintenance and enhanced power system performance. Inrush type events, such as motor start-up, typically requires extended duration cycle-by-cycle recording. With Xplorer Plus, users can capture and store detailed data to evaluate system performance against specifications and previous benchmark data. Under the current inrush mode, triggers are typically current based. By operating in the inrush mode, the instrument will capture and store highly detailed data in real time, then rearm and be ready to capture data during the next test run.

Fault Recorder: A fault in a circuit is usually due to unintentional grounding, a break in the line, a crossing or shorting of the wires, etc. A digital fault recorder logs extended duration cycle-by-cycle recording. Under the fault recorder mode, triggers are typically voltage-based. The Xplorer Plus can help locate failures detected in various components of assorted equipment by recording an extended period of cycle-by-cycle data to capture the entire duration of the fault and the associated system response.

Energy & Demand Audits: Monitors demand and energy parameters for energy audits, efficiency studies and cost reduction programs.

Long-Term Timed Readings: Performing a statistically valid power quality energy survey requires the capture of a set of basic data over an extended period of time. The Xplorer Plus is designed to facilitate long-term monitoring by collecting min/max/avg data at each predetermined interval to perform post-process harmonic and other events analysis. The Xplorer Plus is also designed to be left unattended in the field, recording statistically representative data for long-term analysis.

Continuous Data Logging: This logs the rms and power values once per second for totally gapless logging. Cyclic triggers are disabled. No waveforms are recorded under this monitoring mode.

Voltage Compliance (EN50160): EN50160 monitors and reports Quality of Supply (QOS) compliance as specified by the EN standard. The seven parameters required by EN50160 to determine QOS compliance are:

Power Frequency, Supply Voltage Variations, Rapid Voltage Changes, Supply Voltage Unbalance, Harmonic Voltage, Interharmonic Voltage, and Mains Signaling.

Motor Quality: Automatically sets up the parameters that affect the operation of motors. Motor parameters include True Power Factor, Horsepower and Derating Factor, among others.

NOTE: You can override the default settings in any of the above monitoring modes to customize the instrument to your application.

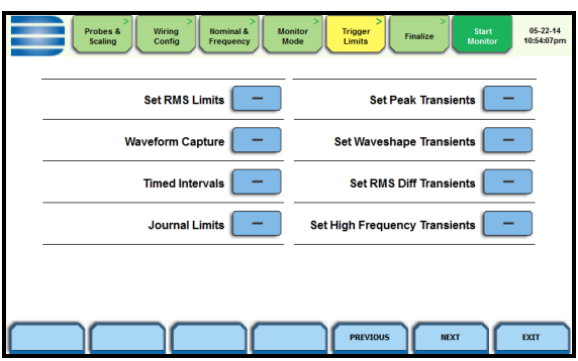
Limits Setup Options

After selecting a monitoring mode, the system is now ready to begin monitoring and to record data in memory. Prior to actual monitoring, you have the option to accept the default threshold settings and proceed with monitoring, or to review and/or modify monitoring settings.

Trigger limits list the threshold parameters available for review or modification. Experienced users can customize threshold settings according to their applications. They can turn on or off any available parameters and enter new threshold limits, as required.

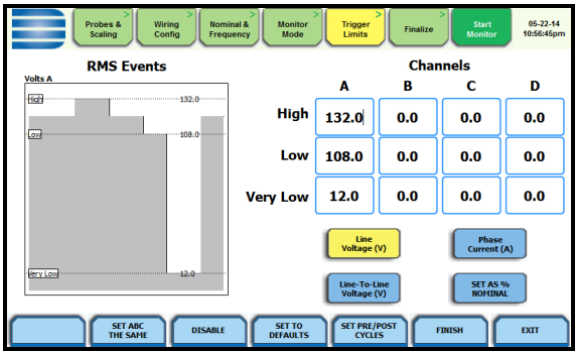
After selecting a monitoring mode, press the Trigger Limits tab or press Next. The Limits screen will vary according to the selected monitoring mode.

Trigger Limits for all Monitoring Modes Except Voltage Compliance (EN50160):



The Xplorer Plus allows you to set the limits for the following triggers:

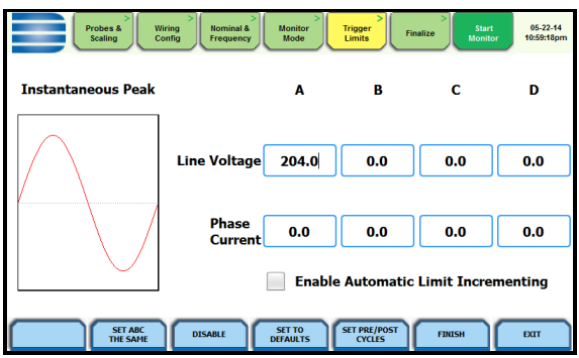
- **Set RMS Limits** – use to review/modify limits for rms variation as well as set the amount of rms value (in cycles) to record before and after the trigger cycle.



Dranetz instruments label rms voltage or current variations as either sags (voltage or current decreases below low limit) or swells (voltage or current increases above high limit) as per IEEE 1159. Voltage disturbances which are shorter in duration than typical sags and swells (which are usually 1/4 cycle or longer) are classified as transients.

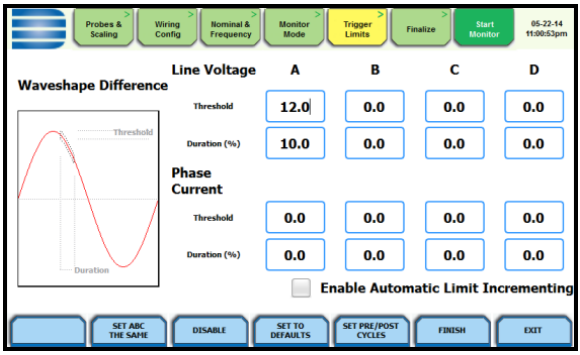
The Xplorer Plus uses four different algorithms to detect and record transients, while Dranetz HDPQ Guide Plus and Visa Plus have three. You have the option to check Enable Automatic Limit Incrementing to set limit trigger channel settings to auto-threshold mode.

- **Set Peak Transients** – use to set peak or instantaneous trigger magnitude. The crest factor or instantaneous peak is the absolute peak sample value within one cycle. The instantaneous peak triggers on the absolute peak value of the entire waveform.

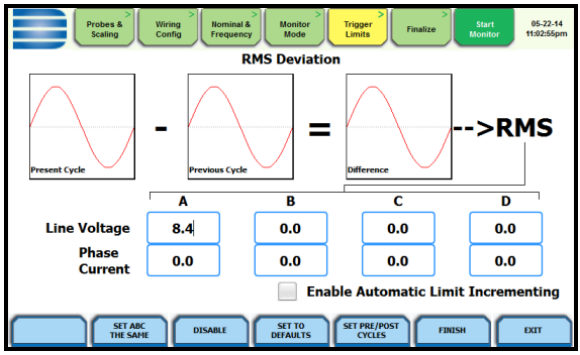


- **Set Waveshape Transients** – use to set waveshape threshold duration (window) and magnitude (tolerance) cycle to cycle. A trigger

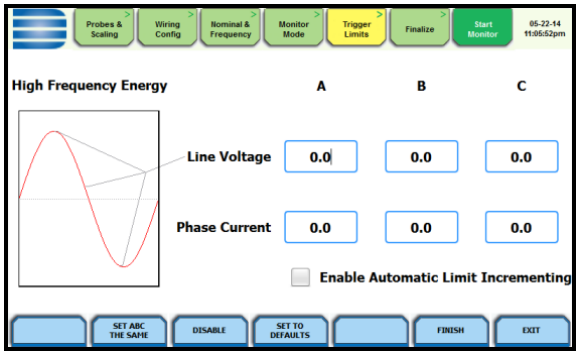
occurs when either waveshape or rms deviation go outside the programmed thresholds. Waveshape trigger values include the magnitude and duration of the difference between the present and previous cycle.



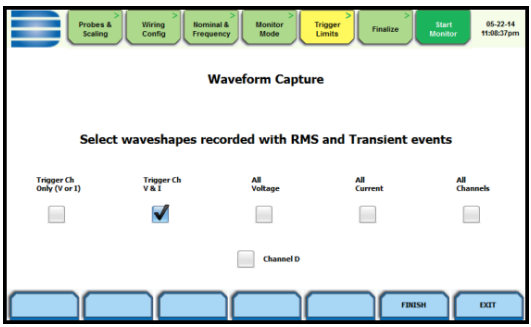
- **Set RMS Diff Transients** – use to set the rms distortion waveshape limit. The rms deviation algorithm subtracts the same point-on-wave sample values from previous to present cycle then calculates the rms value of the deviation over an entire cycle. If this value exceeds the threshold, then a trigger occurs.



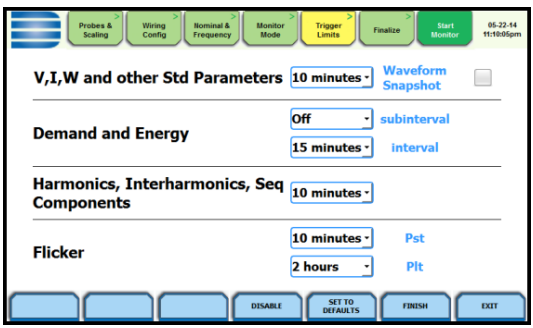
- **Set High Frequency Transients** – the high-speed sampling analog board installed in Dranetz HDPQ Xplorer Plus enables it to detect and capture transients as small as 1 microsecond in duration. This transient detection algorithm is only available on the Xplorer Plus.



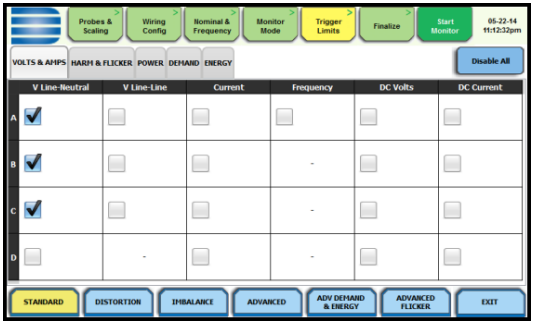
- **XTRIG Channels** – use to set the trigger channels/parameters for waveform capture to determine which channel's data will be saved when a trigger occurs.



- **Timed Intervals** – use to define how often you want the Xplorer Plus to save data periodically, regardless of power quality disturbances and journal limits. The intervals for timed readings are user programmable.

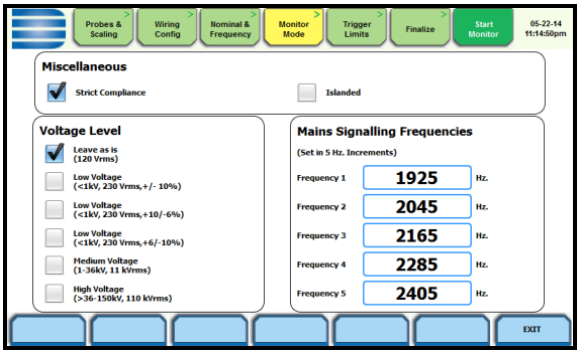


- **Journal Limits** – multiple parameters are available for recording by exception. This menu lets the user specify thresholds to force journal recording at the moment the threshold is crossed. Note only the values of the parameter are captured, and not rms or waveform data.



Monitoring Mode for EN50160 Voltage Compliance

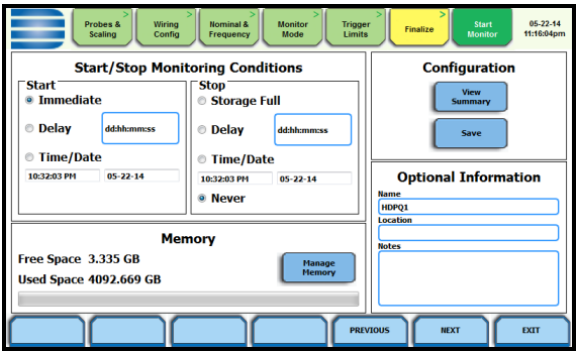
The following screen appears if the selected monitoring mode is Voltage Compliance (EN50160):



If the default settings for the specified monitoring mode are acceptable, proceed to the next tab Finalize (if there is nothing else to change). If Strict Compliance is not checked, you can customize the setting on this screen.

Finalize Monitoring Setup

Once the instrument has been set up for monitoring or after reading a setup template from memory, you can finalize and configure the monitoring process using the parameters below.



Start/Stop Monitoring Conditions

Under the Start monitoring options, select one from the following:

- Immediate - to begin monitoring immediately
- Delay - use the window provided to enter the number of days, hours, minutes or seconds of delay to start monitoring from the present time
- Specified time and date - use the corresponding windows provided to specify the time and date when monitoring begins

Under the Stop monitoring options, select one from the following:

- Storage full - to end monitoring when memory storage is full
- Delay - use the window provided to enter the number of days, hours, minutes or seconds of delay to end monitoring
- Specified time and date - use the corresponding windows provided to specify the time and date when monitoring ends
- Never - to keep monitoring without a specified end date/time

NOTE: You can manually stop monitoring at any time using the Stop Monitoring icon.

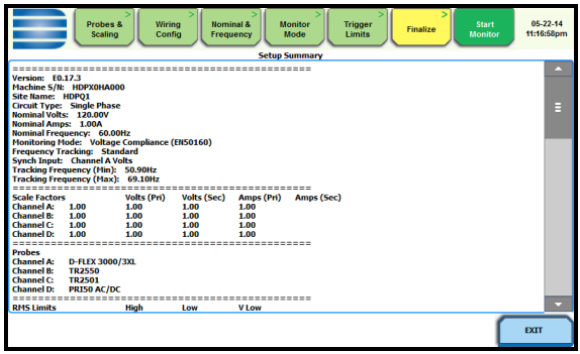
Under Memory:

- Free Space - indicates the remaining space in memory in gigabytes
- Used Space - indicates the memory space used in gigabytes
- Manage Memory - lists the recorded monitoring sessions, when events have been captured and stored in memory. Each recorded session is identified by the Session #, Name, the Date and Time range when monitoring started and ended, and the Number of Event

Records contained in the particular session. The monitoring sessions are arranged in the order of date and time they were recorded.

Configuration:

- View Summary - use this key to display the parameter settings in effect; Setup summary is available for review before, during, and after monitoring.



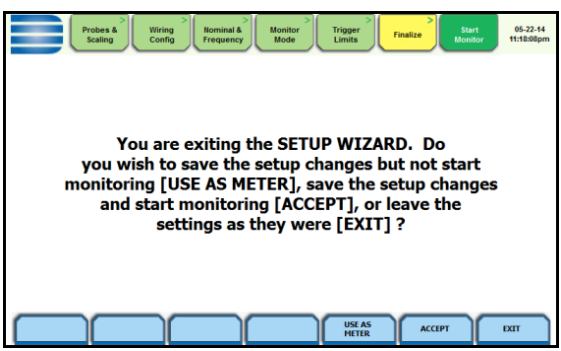
- Save - use this key to create a filename and save the Setup file template in memory.

Optional Information:

- Name - You can enter a monitoring session name which will be used to identify a session in the HDPQ session list. This name will also be used as a file name when archiving a session to the USB flash drive.
- Location and Notes - You can add additional lines of text in this field which will be displayed in the setup summary.

Exit Setup

At the end of the Wizard Setup, the Exit Setup screen prompts you to either accept the setup changes or not, before going on to start monitoring (if accepted). You also have the option to use the instrument as a meter, where monitoring setup changes are retained without turning monitoring on.

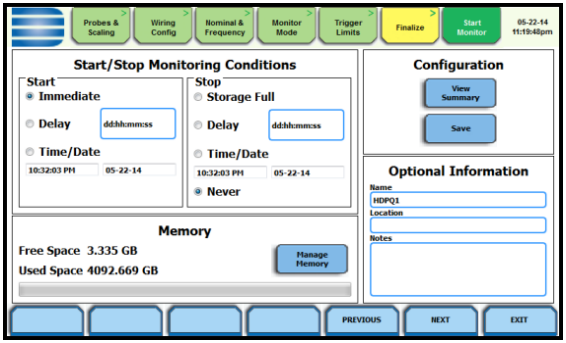


If you jump to the Start Monitor mode while stepping through the Wizard Setup, this screen will pop up to verify if the changes are to be accepted or not, before continuing to start monitoring (if accepted).

- Use as Meter if you want to finish the setup process (save setup changes) but DO NOT turn monitoring on.
- Accept if you want to confirm changes made in monitoring settings and start monitoring.
- Exit if you want to retain monitoring settings as they were and return to Start Menu.

Monitor Same Circuit

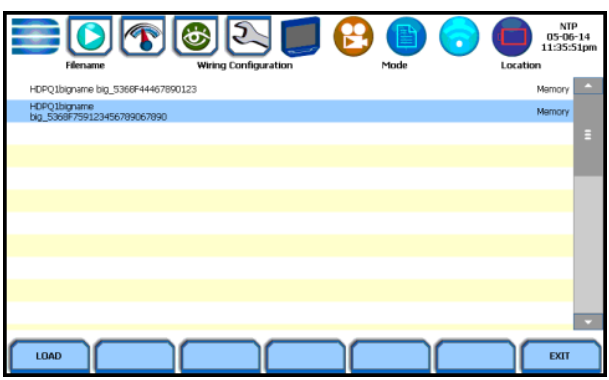
Menu options for monitoring become available only after setting up the instrument or from reading a setup template from memory. You can make use of existing setups for monitoring using the Monitor Same Circuit key.



Load Setup Template

The Xplorer Plus lists the setup template files (.set) stored in internal memory or external USB device, along with wiring configuration, setup mode application and location of file. Setup files are arranged in the order of date and time they were recorded.

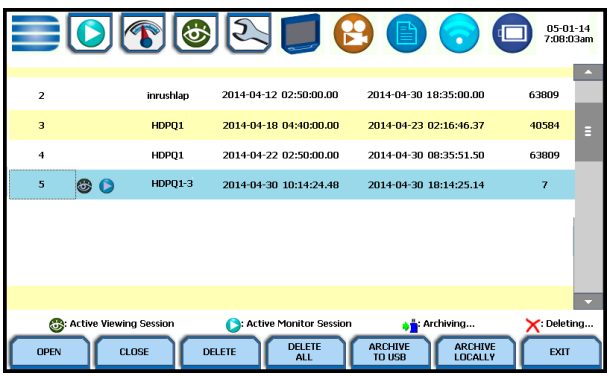
NOTE: Loading a setup template from memory will overwrite your existing setup.



Select (highlight) the desired setup template file that you want to Load from internal memory or USB into the instrument's setup memory.

Load Data File from Memory

The Xplorer Plus lists the recorded monitoring sessions, when data has been captured and stored in memory. Each recorded session is identified by the Session #, Name, the Date and Time range when monitoring started and ended, and the Number of Event Records contained in the session. The monitoring sessions are arranged in the order of date and time they were recorded.



NOTE: The icons on the screen indicate the status of action you take with a particular session data file.

Select (highlight) the desired session data file, then press the key corresponding to the action that you want to take:

- Open - brings up the Event Data & Reports menu. Once you open a session data file, it will load and store it into the instrument's event and trend memory, and it becomes available to be acted on by the view data screen functions.
- Close – removes the data file from the instrument's event and trend memory.
- Delete - clears the selected (highlighted) session data file in the list. This will remove the selected file from memory.
- Delete All - clears all session data files in the list. This will remove all data files from memory.

  NOTE: All data files stored in event memory will be lost when you press Delete All. Copy any file that you want to save to a USB flash drive or computer first before deleting all files.

- Archive to USB - copies and saves data files from internal memory to an external memory device (USB). Once the files have been saved, you will need the Dranetz Dran-View® program to retrieve and view the files in your computer.

  NOTE: When saving files to USB:

  If the data file is open for active viewing, you must close the file first to archive or save the file to the USB flash drive.

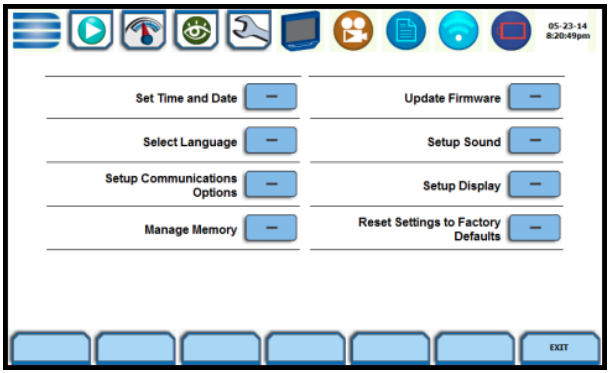
  If the data file is open for active monitoring, you must first press stop monitoring, then view the setup session file. Once the setup file has been successfully recorded, events captured, and then stored in memory, you can proceed to archive or save the file to a USB flash drive.

- Archive Locally - copies and saves data files locally into the instrument's internal memory. Once the files have been saved, it becomes available to be acted on by the view data screen functions.

  NOTE: You cannot archive an active session file. You must close the file first in order to save it to the instrument's local memory.

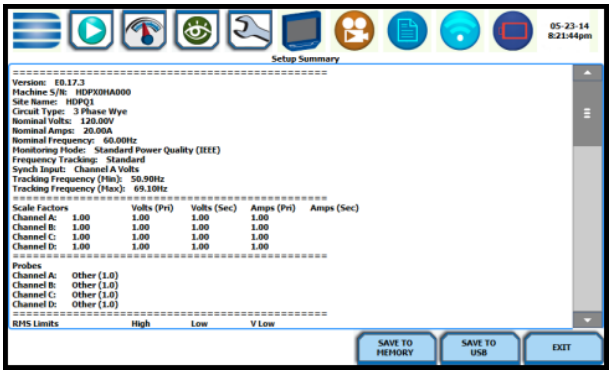
Change Instrument Configuration

The Xplorer Plus lets you manage the instrument to ensure that it runs efficiently, and the instrument is set up according to your preferences and application.



View/Save Monitoring

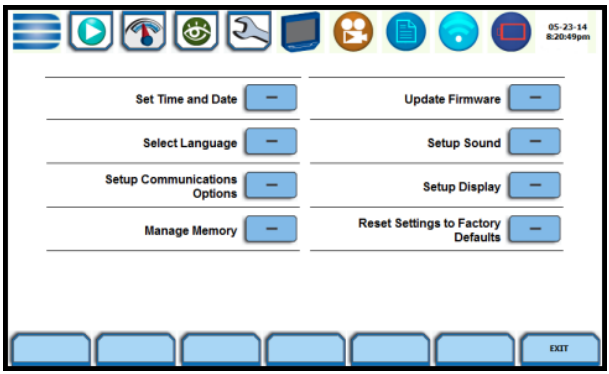
Setup summary displays the list of parameter settings for the present setup application. You can save the monitoring settings to internal memory or to an external USB flash drive.



- Save to Memory if you want to save the monitoring settings to internal memory.
- Save to USB if you want to save the monitoring settings to an external USB device. Make sure the device is plugged into the USB port.

INSTRUMENT SETTINGS

Instrument settings describe the miscellaneous tasks that you can perform to keep the Xplorer Plus running efficiently. These are tasks that you might perform only occasionally.



You can configure the instrument to set up the following:

- Time and date display
- Language selection
- Communications options
- Manage files in memory
- Firmware update
- Trigger alarm setup
- Setup display
- Factory default settings

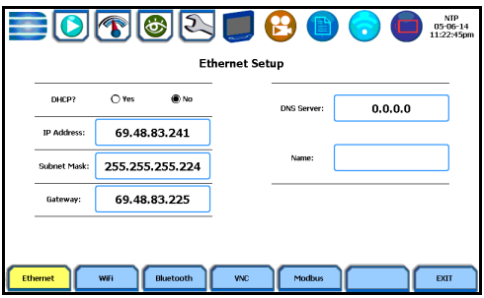
As with other instrument control functions, there are three ways to access the Setup Instrument page:

1st – upon instrument power-up and prior to monitoring, using the large shortcut button, select Setup Instrument on the Home page.

2nd – on the taskbar of most typical screens, where shortcuts to common instrument functions including Setup Instrument are found.

3rd – from the Start Menu, press Change Instrument Configuration.

Set Up Communications Options
Communications setting is where you enter instrument-specific information to enable the Xplorer Plus to communicate to external devices. The available communications interfaces are: Ethernet, WiFi, and Bluetooth (optional). WiFi is standard for the HDPQ Xplorer Plus and Guide Plus. WiFi is factory installed and not available on the Visa Plus. These communications interfaces can be used for VNC remote control, remote access by the Dranetz HDPQ App, and for Modbus TCP.



Ethernet IP connection (Wired) – The Xplorer Plus can be connected to any Ethernet network (10/100 MBaud Ethernet) using Ethernet/IP software protocols. The instrument must be connected to the computer network via the Ethernet cable port. Configurations using the Ethernet/IP protocol require an IP Address for network communication, and a Gateway address to effectively communicate with the host device.

Wireless (WiFi) network connection – The wireless network connection is identical to a standard Ethernet connection, except that it requires a wireless local area network (WLAN) access point or hotspot based on any of the 802.11x standards, a wireless network card installed in the Xplorer Plus (factory-installed at the time of purchase), and a wireless-enabled host laptop/computer.

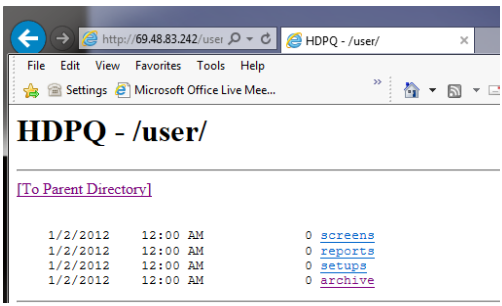
Bluetooth connection (optional) – The Xplorer Plus requires the addition of a (optional) Dranetz supplied Bluetooth external adapter in order to connect to a wireless-enabled device using the Bluetooth networking mode. The Bluetooth interface uses a PAN network that is only available on PC based devices.

VNC connection – The Xplorer Plus can be VNC-enabled so that any VNC Client can access the instrument remotely, provided the correct password is entered. Virtual network computing (VNC) software allows you to view and interact with the Xplorer Plus from any other computer or mobile device anywhere using the Internet. VNC software is cross-platform, allowing remote screen-sharing control of the Xplorer Plus. A VNC app or program (not supplied by Dranetz) is required on your computer, tablet or smartphone for VNC remote control.

Modbus connection – HDPQ Xplorer Plus can also be connected for real time measurement reading via the Modbus/TCP protocol.

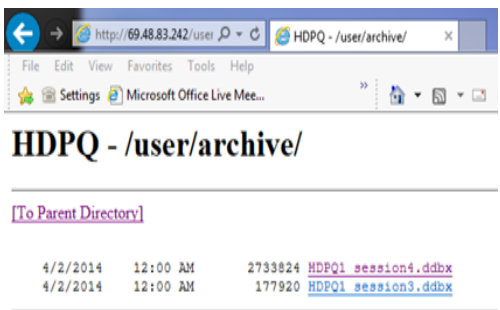
Download Data Remotely via Network, WiFi & Bluetooth PAN

1) Navigate to the Manage Memory screen (Instrument Settings > Manage Memory). Select a recorded monitoring session and press **Archive Locally**.
2) Connect to the instrument with a web browser and enter http://xxx.xxx.xxx.xxx/user, where xxx.xxx.xxx.xxx is the IP address of the instrument.
3) Enter the Username and Password for the instrument.
   The username is always **admin**. The default password is **Dranetz**. Password setups can be done in the instrument's Communications settings.
4) The web page will show four folders, each of which contains the following information to upload:



screens – contain all screen snapshots not associated with a mini report
reports – contain the Mini Reports
setups – contain the Setup files
archive – contains the ddbx data folders

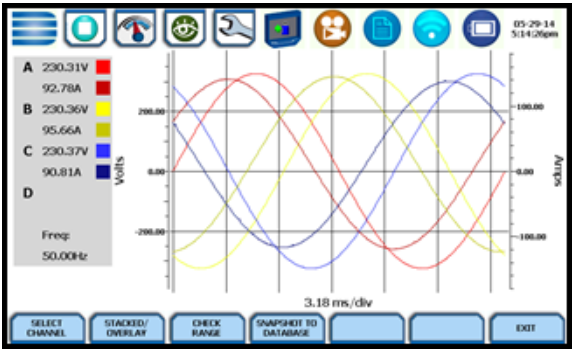
5) Click on any folder to see the available files to download. Proceed to select a file to download to your computer. The selected content file will be downloaded into the **Downloads** folder of your web browser.



REAL TIME METER MODES

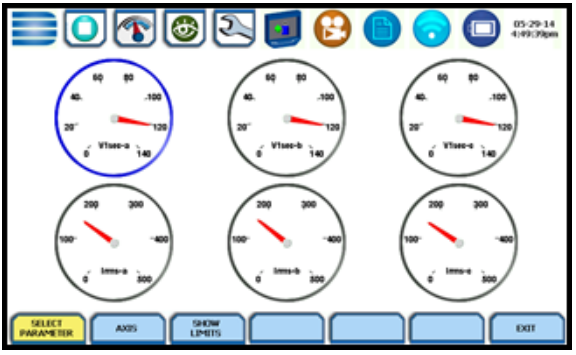
Scope Mode

Scope mode functions as an oscilloscope, displaying real-time waveforms of voltage and current for up to eight channels simultaneously, updated approximately once every three seconds. The colors of waveform display are user programmable. Waveforms may be displayed on a single or dual axis (overlaid or stacked). A range check function shows the detected input range for all channels. Scope mode also provides a textual display of rms values, division for axis values, and frequency.



Dial Meters (graphical)

Dial Meters allow you to define the parameters and create dial-type readings of each channel or parameter. Readings are updated approximately once every three seconds. Six dial type meters can be displayed for any of the channel/parameters that are journaled. By default, the instrument shows dial-type readings for Va, Vb, Vc, Ia, Ib, Ic. Axis (end points of meter) can be changed on a per meter basis, and journal limits can be shown as bands of colors on the dial face.



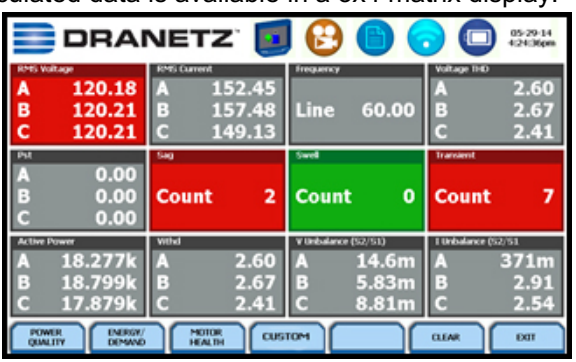
Text Display Meters (tabular)

Text display meter screens are displayed in tabular form. The metered parameters are logically separated into the following tabs: Standard, Distortion, Unbalance, Advanced Power, Advanced Demand & Energy and Advanced Flicker. The function keys at the bottom of the meter screens change depending on the parameter tab selected.

NOTE: Meter mode operation does not interfere with any of the other Xplorer Plus monitoring or recording functions.

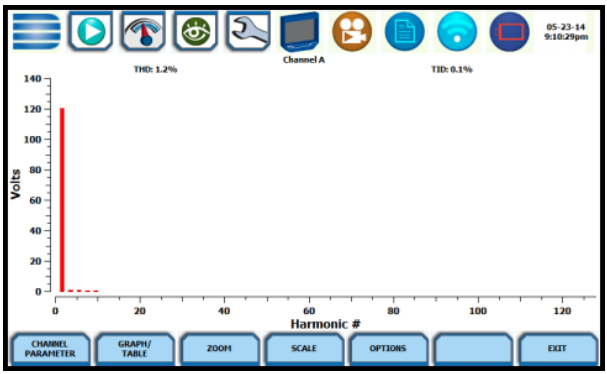
Dashboard

The Dashboard is a visual way of seeing present values, and if any events occurred, such as out-of-limit conditions, for each of the displayed parameters. The Dashboard is color coded to indicate whether the parameter is within limits. Green indicates the parameter is within limits and/or no events have occurred since the Dashboard was last cleared. Red indicates the parameter is extremely out of limits and/or events of that type have occurred since the Dashboard was last cleared. It can display status summary for three report types - Power Quality (PQ), Energy/Demand and Motor Health. Real time data, event count, or user specified calculated data is available in a 3x4 matrix display.



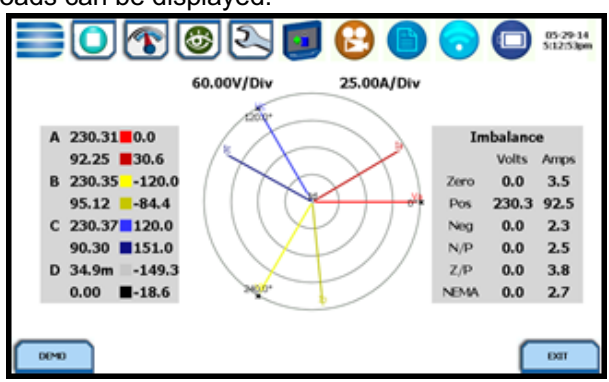
Harmonics

Harmonics display the amplitude and phase of each harmonic to the 127th harmonic in both graphical and textual format. You can select which parameter to show the harmonics for (V, I, W), which channel (A, B, C, D) zoom in on the 5Hz components, set options such as show harmonics and/or interharmonics and then display in Hz or harmonic number, scale to the fundamental or absolute value, and list the harmonic magnitudes and phase angles in tabular fashion.



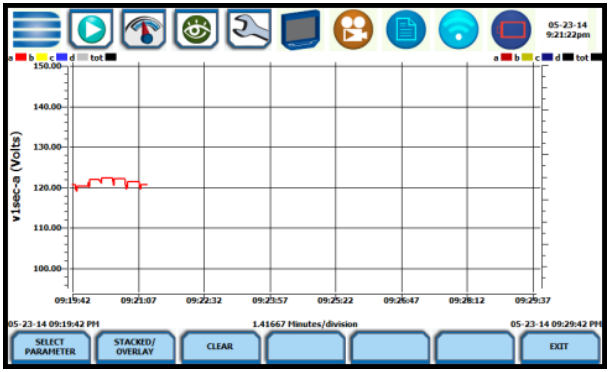
Phasor Display

The phasor screen displays a graph that indicates phase relations between voltage and current based upon the angles at the fundamental frequency, as determined by Fourier analysis. Phasor diagram displays voltage and current phasors for all channels. Functioning as a phase angle meter, the instrument can display system imbalance conditions and provides such information in textual form as well. The phase angle display can also verify if monitoring connections have been made correctly. Animated phasor demo rotations demonstrating resistive, inductive and capacitive loads can be displayed.



Strip Chart Recorder

Strip Chart Recorder displays a real-time auto-scaled graph of selected parameters, updated once every 3 seconds. The initial strip chart screen records up to 10-minutes worth of horizontal scale data, with the vertical axis also initially on auto-scale. Once 10-minutes worth of data is drawn across the entire graph, the horizontal scale continues to shift forward in time with each update. This process continues until the Clear function key is pressed.

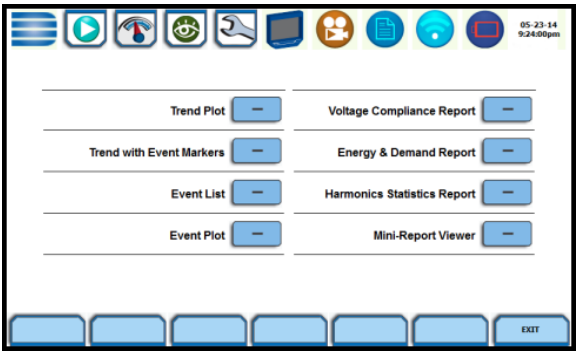


STORED DATA FUNCTIONS AND DISPLAYS

The Xplorer Plus offers a graphical, information-packed, and easy to navigate display of event data. Trend, Event List, Event Plot, and Event Waveform are available for display, with options to view detailed information in graphic as well as textual form. The Xplorer Plus also does Voltage (Quality of Supply or QOS) compliance monitoring as specified by EN50160, or other similar voltage compliance standards.

Event Data and Reports Menu

Event data and reports become available while monitoring is on or upon reading a file from internal memory or external flash drive. Press the Recorded Data icon to bring up the Event Data & Reports menu. While monitoring is on, you can use the Data Review icons to bring up the same data and reports menu.



The Event Data & Reports menu lets you select how to display recorded data, either in graphic or textual form. These include both trended data and events generated from user programmed triggers or thresholds.

What are Events?

An event occurs when a programmed threshold limit is crossed. An event consists of the pre-trigger cycle(s), trigger cycle(s), and post-trigger cycles(s), when available. The event data for all the captured channels can be displayed in time plots of the rms values or waveforms, event details such as trigger conditions, characterization of the event according to PQ standards, and min/max values, or the time-stamped event list.

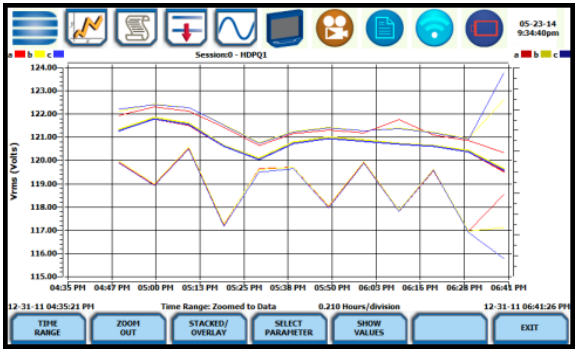
What is displayed on a Trend?

It shows journalled (timed) event data trend over a specific time range. Journals are periodic events recorded by the instrument at a specified timed interval. The trend plot can show up to three (3) parameters, and each parameter can then show up to four (4) channels on the same axis.

Trend Plot

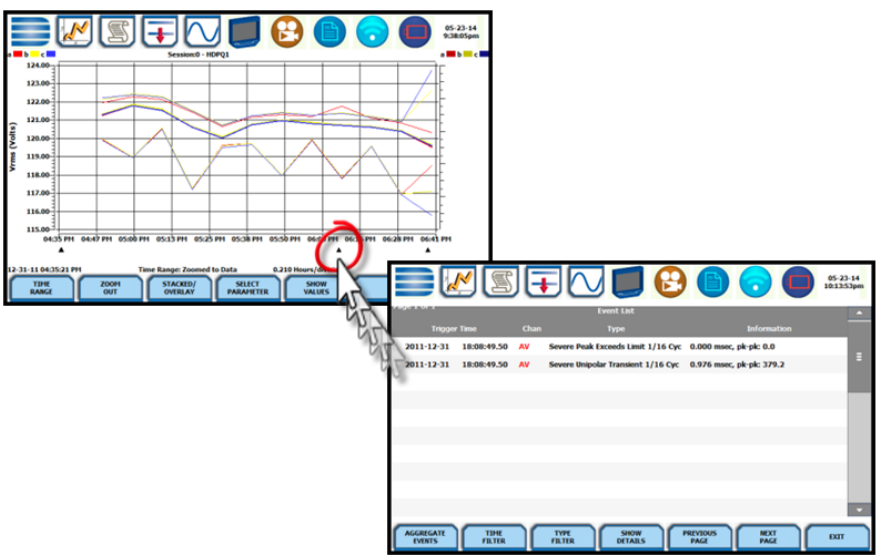
Users can generate time plots or trend visualizations for all journalled data combined with min/max/avg recordings of that parameter. Most journal parameters have multiple channels to plot. The Trend screen can display up to four (4) stacked graphs with as many as four (4) channels in each

graph. You have the option to enable/disable plot display; the display area will resize according to the number of plots enabled for display.



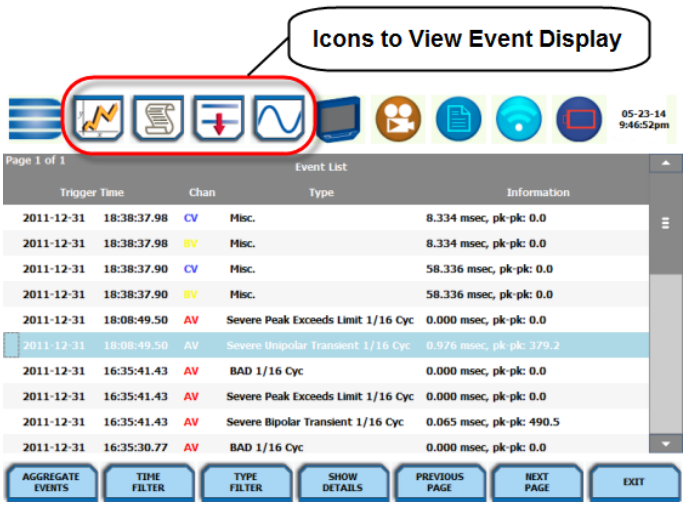
Trend with Event Markers

The same as trend plots, but includes event markers on the time axis where there are events - events are marked on the horizontal axis with a triangle. Pressing a triangle will allow you to jump to the event list showing events near this marker.



Event List

Presents a summary of all captured events in the order in which they occurred. Each event entry contains the date and time when the event was captured, the color coded channel/parameter of the captured event, the event category and event classification. The event list can be filtered by type and/or time.



Once you bring up an event screen, the taskbar changes to show specialized icons that provide easy access to view event display. These icons are not common to all screens, only to event data screens.

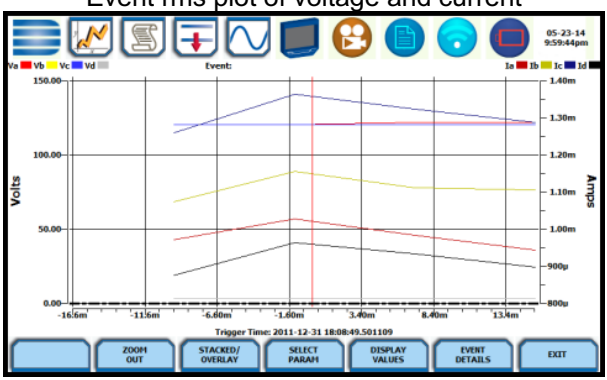
	**Trend Plot** Displays time plots or trend visualizations of journalled data.
	**Event List** Presents a summary of all captured events in the order that they occurred.
	**Event Plot (rms)** Shows the voltage and current rms plots recorded for the event. Threshold values and event details can be displayed using the corresponding function keys.
	**Event Waveform** Shows the voltage and current waveforms that were captured with the event, based on user settings.

Event Plot (rms)

Event rms plot displays the actual voltage and/or current rms that occurred when a certain threshold parameter was crossed.

The horizontal black dotted lines indicate the upper and lower limits that trigger events. The Red vertical line indicates the trigger timestamp or start of event.

Event rms plot of voltage and current

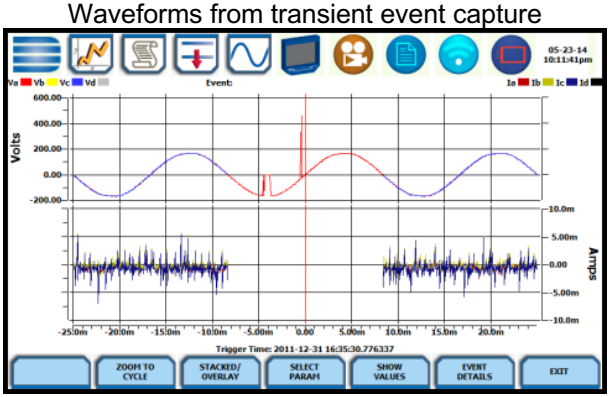


NOTE: Event plot displays events in rms by default. To view event plot in waveform display, press the Waveform icon on the taskbar.

Event Waveform

The Xplorer Plus allows you to view events in graphic waveform display.

Waveforms from transient event capture



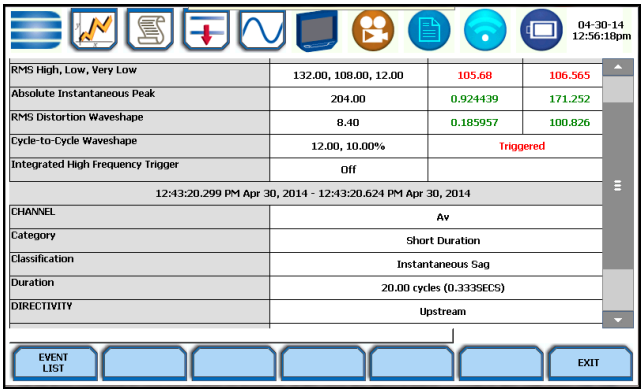
NOTE: The instrument will only display waveform data for channels that are enabled to record waveforms. For channels that do not have associated waveform data, the screen will maintain the format but will leave the plot blank.

Event Detail

Event detail screen is generated for each event. Event details show the triggered parameters and event data saved by the instrument, along with characterization information about the event. The event details will also include result of the Sag Directivity and Power Factor Correction Capacitor AnswerModules (not available on Dranetz HDPQ Visa Plus).

Each event entry is identified by the time and date when the event was captured (shown on header row), the trigger parameters, and characterization details pertaining to the selected event entry. The threshold values captured are color coded. Triggered parameters that are within limits are shown in green. Triggered parameters that are out of limits, exceeding Low or High threshold limits, are shown in red.

Detailed information of transient event capture

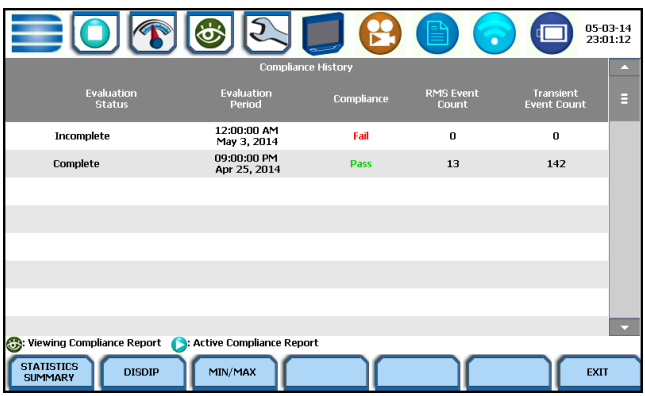


REPORTS

You have the option to view and set up data via the Voltage Compliance Report, Energy/Demand Audit Report, Harmonics Statistics Report or the Mini-Report Viewer. Each report has its own method of presenting compliance data, as well as differs on the length of evaluation period to monitor compliance.

Voltage Compliance Report

Voltage Compliance Report appears in the form of a table called Compliance History. Compliance History displays a summary of the QOS evaluation status. The Voltage (QOS) functionality is equipped with monitoring and setup protocols to meet the measurements required for EN50160 monitoring. EN50160 is a European standard that stipulates the voltage characteristics that can be expected in public distribution networks. EN50160 specifies that various parameters must be within a specified percentage for 95% of the standard one-week monitoring period.

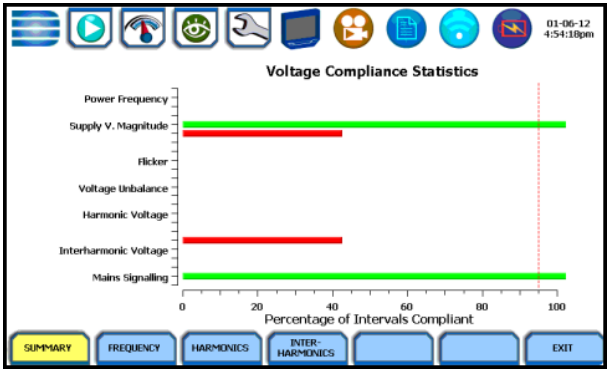


Use the respective functions keys – Statistics Summary, DISDIP, Min/Max - to view the voltage compliance summary, the magnitude and duration distribution table (DISDIP), and the min/max values for Power Frequency and RMS Voltage during monitoring interval.

Statistics Summary

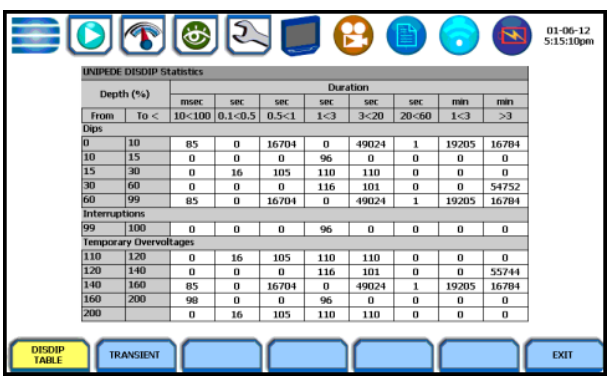
Voltage Compliance Summary appears in the form of a statistical bar chart featuring the seven parameters required for determining QOS compliance. The color of the bar indicates compliance status. A green bar indicates that the parameter is within compliance. A red bar indicates that the parameter does not comply with the QOS limits. Each measurement parameter is discussed in the following pages.

You can view component graphs for three parameters using the soft keys provided - Frequency for Power Frequency graph, Harmonics for Harmonic graph, and Interharmonics for Interharmonic graph.



DISDIP

The EN50160 DISDIP (distribution of dips) table is based upon the event statistics calculated by EN50160. It includes the UNIPEDE DISDIP Statistics and the table for Transient Overvoltages. UNIPEDE DISDIP data is collected and saved on a weekly basis with the counts reset as the final file save occurs. If additional data is detected for an evaluation period after that period has been saved, that internal data is retrieved and updated.

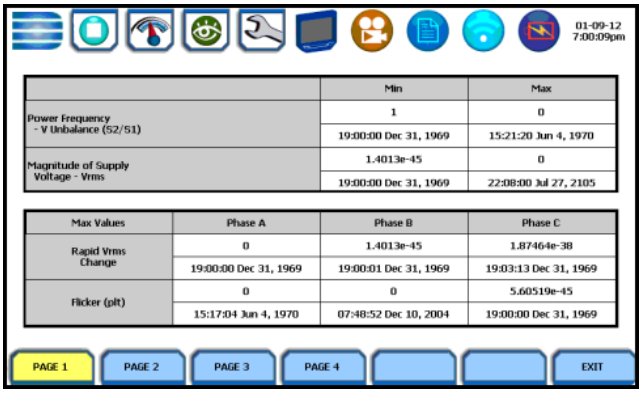


Depth (%)		Duration							
		msec	sec	sec	sec	sec	sec	min	min
From	To <	10<100	0.1<0.5	0.5<1	1<3	3<20	20<60	1<3	>3
Dips									
0	10	85	0	16704	0	49024	1	19205	16784
10	15	0	0	0	96	0	0	0	0
15	30	0	16	105	110	110	0	0	0
30	60	0	0	0	116	101	0	0	54752
60	99	85	0	16704	0	49024	1	19205	16784
Interruptions									
99	100	0	0	0	96	0	0	0	0
Temporary Overvoltages									
110	120	0	16	105	110	110	0	0	0
120	140	0	0	0	116	101	0	0	55744
140	160	85	0	16704	0	49024	1	19205	16784
160	200	98	0	0	96	0	0	0	0
200		0	16	105	110	110	0	0	0

The DISDIP table also includes those events of Transient type. Use the Transient key to display data for Transient Overvoltage.

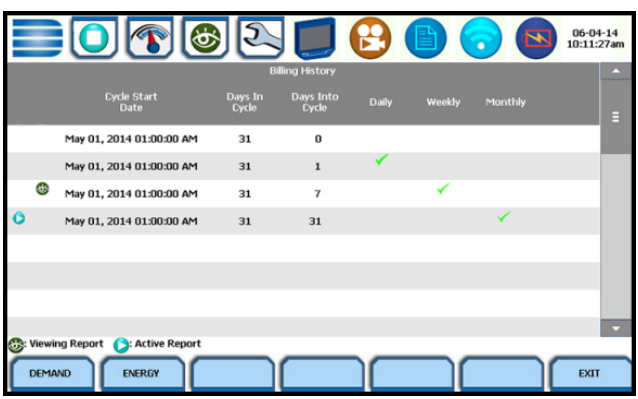
Min/Max

The Min/Max table displays the minimum and maximum values for Power Frequency and RMS Voltage, along with the time and date of occurrence. Maximum phase values of Rapid Voltage Change, Flicker, Supply Voltage Unbalance, and Harmonic are also displayed along with time and date of occurrence. Press the next pages to display the rest of the table values and view Harmonic values up to order number 25.



Energy and Demand Report

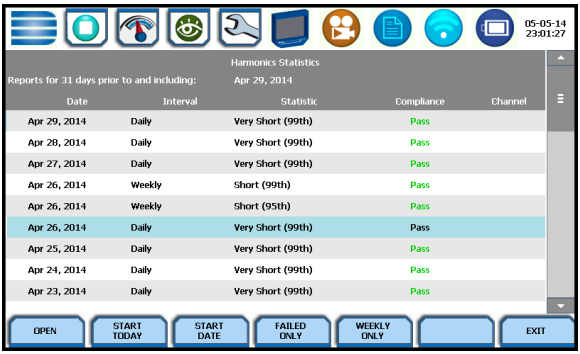
The Xplorer Plus gives you the option to view the demand and energy report. The report list, as shown below, helps you monitor and manage energy consumption including utility costs.



Use the function keys at the bottom of the screen to select Energy or Demand report for viewing.

Harmonics Statistics Report

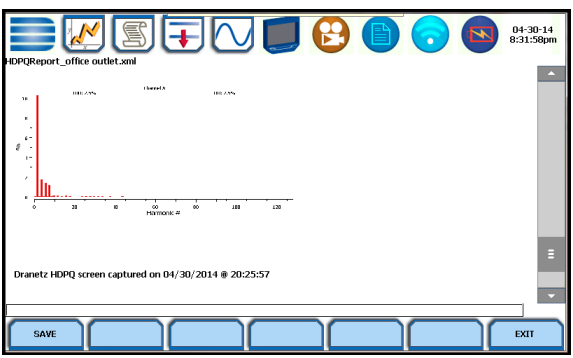
Harmonics Statistics Report allows you to set up a harmonic statistics report, based on the 3-second data calculating the 95 and 99% values per IEC 61000-4-7 and IEEE 519.



Use the function keys at the bottom of the screen – Open, Start Today, Start Date, Failed Only, Weekly Only - to set up the report.

Mini-Report Viewer

The Mini-Report Viewer brings up the list of active or previously saved mini-report(s) available. Select the report that you want to view or save to an external USB flash drive.



Use the Open key to view the report to the full size of the LCD display, with the taskbar on top remaining active and viewable. The viewer opens the file in .rtf format, with read only function, and editing not enabled.

The Delete All key clears all active or previously saved mini-reports on the list. This will remove the mini-report files from memory.

The Copy to USB key allows you to save the report file - with the text and image, if any. Graphics are saved as an image in .bmp format, while alphanumeric content is saved as a text (.txt) file.

Storage and Transport

Attention

Improper storage.
Damage to the product and measuring error due to environmental influences.
Store the instrument in a protected location and only within the limits of permissible ambient conditions. The ambient conditions (temperature, humidity etc.) can be found on page 62.

Attention

Improper transport.
Damage to the product and measuring error.
Transport the instrument only within the limits of permissible ambient conditions (temperature, humidity etc.), see page 62.

Cleaning

Danger

Life endangering due to electric shock!
The instrument and its accessories are operated with electrical power, therefore there is a general risk of electric shock. This can be fatal or cause serious injuries.

- The instrument, the accessories and all connected conductors must be voltage-free before and during cleaning. Switch the instrument off and disconnect it from the mains power supply.
- Never immerse the instrument/accessories in water or other fluids.
- Never touch the instrument/accessories with wet or moist hands.

Attention

Unsuitable cleaning agents
Unsuitable cleaning agents such as aggressive or abrasive cleansers result in damage to the instrument/accessories.

- Use a cloth which has been slightly dampened with water for cleaning.
- Avoid the use of cleansers, abrasives or solvents.

Keep the outside surfaces of the instrument and any accessories clean.

Repair

If your instrument requires repair, please contact our service department.
See page 68.

Note

Loss of warranty and guarantee claims:
Unauthorized modification of the instrument is prohibited. This also includes opening the instrument.
If it can be ascertained that the tester has been opened by unauthorized personnel, no guarantee claims can be honored by the manufacturer with regard to personal safety, measuring accuracy, compliance with applicable safety measures or any consequential damages.
If the guarantee seal is damaged or removed, all guarantee claims are rendered null and void.

- The device may only be repaired or opened by authorized, qualified personnel who are familiar with the associated dangers.
- Original replacement parts may only be installed by authorized, qualified personnel.
- The instrument may not be placed back into operation until troubleshooting and repair have been performed, and calibration and dielectric strength have been tested and approved at our factory, or at one of our authorized service centers.

Technical Specifications

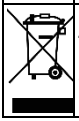
Measured Parameters	
Voltage	
Channels	(4) Differential Voltage: 512 s/c, 16-bit resolution
Range/Accuracy	0-1000Vrms, AC/DC, ±0.1 % reading, <40V ±0.5%FS
Monitoring Compliance	IEC 61000-4-30 Class A: 60-1000Vrms, ±0.1 % of Udin, range of 10%-150% of Udin
Transients	0-1414Vpk, ±0.2 % of Udin
	High Speed: 1MHz (Xplorer/400), 10-2000 Vpk, +/- 10% of reading, +/- 0.5% FS
Current	
Channels	(4) Current: 512 s/c, 16-bit resolution
Range	Probe dep., AC/DC, +/- 0.1% reading +/- 0.05% FS
Frequency	
Range	16-25Hz, 42.5-69Hz, +/- 0.01Hz
Installation Categories	
Mains supply	Installation Category II, Pollution Degree 2
Voltage inputs	1000 Vrms Maximum, Installation Category III, Pollution Degree 2
Dimensions	
Size: (W x H x D)	25.4 x 20.3 x 7 cm, 10” x 8” x 2.75”
Weight	1.9 kg, 4.2 pounds
Environmental	
Operating temperature	0 to 50 °C, 32 to 122 °F
Storage temperature	-20 to 55 °C, 4 to 131 °F
Humidity	10 % - 90 %, non-condensing
Altitude	2,000 m maximum
Clock accuracy	
Internal	+/- 1 sec/day at 25deg C
NTP	+/-10 msec

GPS	+/-1 msec
Power Requirements	
Voltage	Voltage: 90-264 V AC, 47/63 Hz Consumption: 20 watts max
Charger	Use external UL/CE approved battery charger with international plugs. Mechanical On/ Off switch shuts unit down but allows battery to continue to charge with switch in the Off position.
Battery	Field replaceable batteries. 3 hrs Visa/Guide, 2.5hrs Xplorer/400, 3 hours charge time
Display	
Type:	WVGA wide screen color graphic, touch screen Liquid Crystal Display (LCD) with compact fluorescent (CCFL) backlighting. Programmable backlight time-out to reduce power consumption. Reactivates with touch.
Resolution	360 x 240 dot matrix Size: 9.15 cm high x 15.2 cm wide
Touch icons	On the front panel of the instrument, there are three touch icons used to perform various functions, i.e. take a Snapshot of the active screen capture Mini-Reports and access Help screens. These icons cannot be activated with gloves on as they employ capacitive or touch technology.
Alarm	Audible alarm of short (approximately 0.1 second) or long (approximately 1 second) duration to call attention to an error condition or event trigger, respectively.
Communications	
Ethernet	RJ-45
Wi-Fi	802.11 b/g/n (optional). Not available in Visa Plus
USB	Type A
Bluetooth (optional)	Via external USB adapter (Optional. Not available in all countries.) Signal range: 100m (328ft)

	Frequency range: 2400 MHz … 2483.5 Mhz (ISM band) Transmission power: Minimum -11…-9 dBm Maximum +1…+3 dBm
VNC	VNC remote control
Memory	
Internal	4GB

Symbols on the Instrument and the Included Accessories

The following International Electrotechnical Commission (IEC) symbols are marked on the top and rear panel in the immediate vicinity of the referenced terminal or device:

Icon	Meaning
	Warning concerning a point of danger (attention, observe documentation!)
	Power switch
	Direct current (DC) operation of the device.
	European conformity marking
	The instrument may not be disposed of with household trash. See page 69.

Statements and Notices

Statement of Warranty

All Dranetz engineered portable instruments and accessories are warranted to the original purchaser against defective material and workmanship for a period of three years from the date of invoice. User replaceable instrument batteries are warranted for a period of one year from the date of invoice. Certain Dranetz branded accessories, such as current transformers and other accessories not manufactured by Dranetz, are warranted to the original purchaser against defective material and workmanship for a period of one year from the date of invoice. Warranties for products and accessories sold by, but not branded as Dranetz, are covered by their respective manufacturer's warranties and are not warranted by Dranetz. Dranetz will repair or replace, at its option, all defective equipment that is returned, freight prepaid, during the warranty period. There will be no charge for repairs, provided there is no evidence that the equipment has been mishandled or abused. This warranty shall not apply to any defects resulting from improper or inadequate maintenance, buyer-supplied hardware/software interfacing, unauthorized modification or misuse of the equipment, operation outside of environmental specifications, or improper site preparation or maintenance.

Statement of Reliability

The information in this guide has been reviewed and is believed to be entirely reliable. However, no responsibility is assumed for any inaccuracies. All material is for informational purposes only and is subject to change without prior notice.

Notice Regarding FCC Compliance

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

CE Declaration

The instrument fulfills all requirements of applicable EU directives and national regulations. We confirm this with the CE mark.

The CE declaration is available upon request.

Notice Regarding Proprietary Rights

This publication contains information proprietary to Dranetz. By accepting and using this guide, you agree that the information contained herein will be used solely for the purpose of operating equipment of Dranetz.

Trademarks

Dranetz HDPQ®, Scope Mode®, and Dran-View® are registered trademarks of Dranetz.

All trademarks, registered trademarks, logos, product names, and company names are the property of their respective owners.

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Disposal and Environmental Protection

Proper disposal makes an important contribution to the protection of our environment and the conservation of natural resources.

Attention
Environmental damage
Improper disposal results in environmental damage.
Follow the instructions concerning return and disposal included in this section.

The following comments refer specifically to the legal situation in the Federal Republic of Germany. Owners or end users who are subject to other regulations must comply with the respective local requirements and implement them correctly on site. Further information can be obtained, for example, from the responsible authorities or local distributors.

Waste Electrical Equipment, Electrical or Electronic Accessories and Waste Batteries (including rechargeable batteries)

Electrical equipment and batteries (including rechargeable batteries) contain valuable raw materials that can be recycled, as well as hazardous substances which can cause serious harm to human health and the environment, and they must be recycled and disposed of correctly.
The symbol at the left depicting a crossed-out garbage can on wheels refers to the legal obligation of the owner or end user (German electrical and electronic equipment act ElektroG and German battery act BattG) not to dispose of used electrical equipment and batteries with unsorted municipal waste (“household trash”). Waste batteries must be removed from the old device (where possible) without destroying them and the old device and the waste batteries must be disposed of separately. The battery type and its chemical composition are indicated on the battery’s labelling. If the abbreviations “Pb” for lead, “Cd” for cadmium or “Hg” for mercury are included, the battery exceeds the limit value for the respective metal.
Please observe the owner’s or end user’s responsibility with regard to deleting personal data, as well as any other sensitive data, from old devices before disposal.
Old devices, electrical or electronic accessories and waste batteries (including rechargeable batteries) used in Germany can be returned free of charge to GMC-I Service GmbH or the service provider responsible for their disposal in compliance with applicable regulations, in particular laws concerning packaging and hazardous goods. Waste batteries must be

returned in discharged state or with appropriate precautions against short circuiting. Further information regarding returns can be found on our website.

Packaging Materials

We recommend retaining the original packaging materials in case that you might require servicing or calibration in the future.

Warning

Danger of asphyxiation resulting from foils and other packaging materials
Children and other vulnerable persons may suffocate if they wrap themselves in packaging materials, or their components or foils, or if they pull them over their heads or swallow them.
Keep packaging materials, as well as their components and foils, out of the reach of babies, children and other vulnerable persons.

In accordance with German packaging law (VerpackG), the user is obligated to correctly dispose of packaging and its components separately, and not together with unsorted municipal waste (“household trash”).
Packaging which is not subject to so-called system participation is returned to the appointed service provider. Further information regarding returns can be found on our website.

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