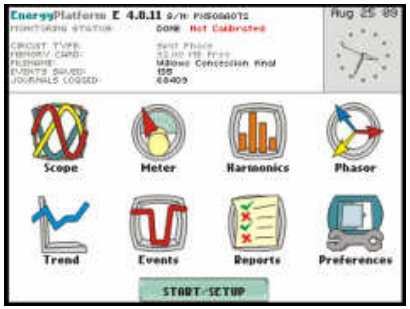
GOSSEN METRAWATT

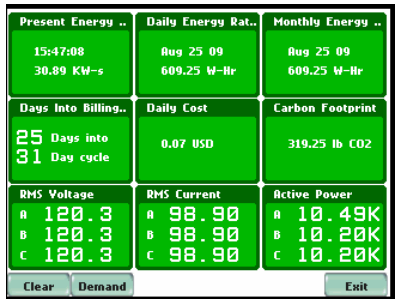
Safety through Competence

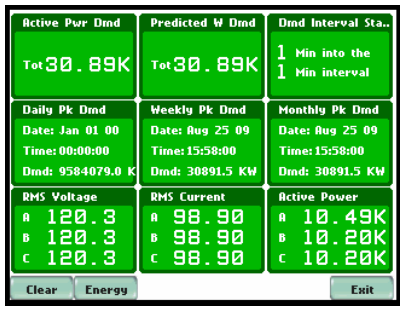
MAVOWATT 20 – Energy Platform

Energy and Power Analyzer

MAVOWATT 20 – The new Energy and Power Analyzer







Applications

- **Electrical energy reduction & cost savings programs**
  - How much energy is used? Where and when used? Daily, Weekly & Monthly KW/KWh
  - Determine energy costs
  - Determine electrical Carbon Footprint

- **Alternative energy such as wind and solar**
  - Monitor individual generators (panels, windmills) or total generation.
  - DC monitoring for solar applications.
  - Direction of energy flow. Producing or consuming electricity

Applications

- **General power studies**
  - V, I, W, VA, VAR, PF, Demand, Energy + more
- **NEC 220.87 demand surveys**
- **Load testing, commissioning**
- **Harmonic studies**
- **Simple PQ studies**



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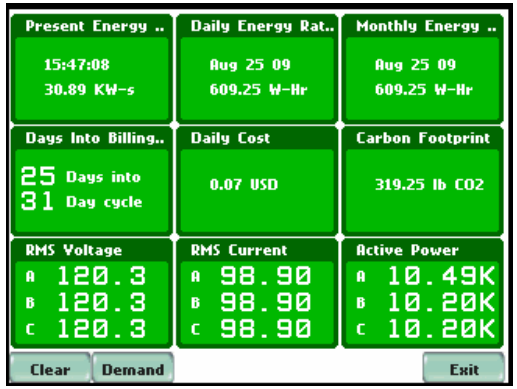
Key Features

- **Powerful, yet very affordable power monitoring!**
  - Better features and easier to use than competition but at a similar price
- **Lightweight portable instrument** – 3.8lb (1.8Kg)
- **Colorful user interface** – No PC software required
  - ¼ VGA color touch screen
- **Easy to read Energy & Demand reports**
- **Carbon Footprint Calculator**
- **EPRW software (no license) included**
  - DranView optional
  - New DranView energy audit report for use with complete MAVOWATT family



Key Features

- **Large Compact Flash memory** for long duration surveys
- **Automatic setup** – Easy beginning
  - No operational training required
  - Easy to use manual setups also available
- **High resolution**
  - 256 samples per cycle. 8 channels, 4V, 4I. Cycle by cycle accumulation with no gaps in measurements!
- **High accuracy**
  - 0.1% V&I (plus transducers)
- **Packages include all that you need!**
  - EP1, voltage cables, CT's, CF Card, Case, EPRW software
- **Additional accessories available**
  - DranFlex XL CT's, Clamp CT's, Enclosures + more
  - Compatible with MAVOWATT 30/40/70

Overview

Single, Common Reference Inputs
D Channel Differential
600VAC, DC L-N, N-G

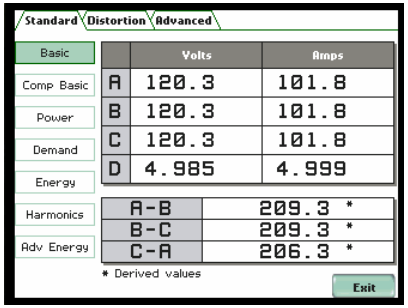
Rugged Plastic Enclosure
Protective Rubber Boot
¼ VGA, Color Touch Screen
3.8 lb/1.8KG

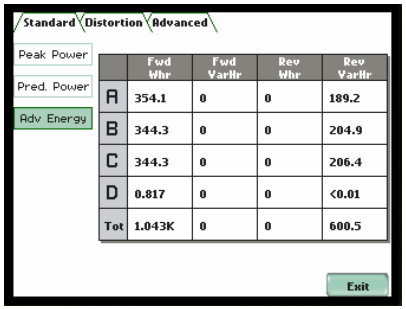
Single CF slot
Power Button
Battery Charge Indicator

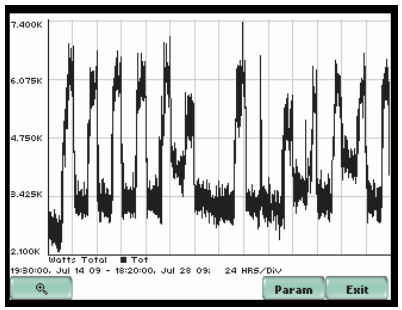
Feature Set

- **Measured, Trended & Triggered Parameters**
  - **Very similar to MAVOWATT 30**
  - **Cycle by cycle** V & I. 256 samples/cycle
  - **CAT III 600V**

  - **Power** – Trend min, max, ave
    - V, I, W, PF. DPF, TPF
  - **Distortion** – Trend min, max, ave
    - Vthd, Ithd. VTID, ITID, TIF, TDF, K Factor
  - **Demand**
    - Active, Apparent, Reactive Power Demand
  - **Energy**
    - KWh, KVAh, KVARh, Forward & Reverse Energy







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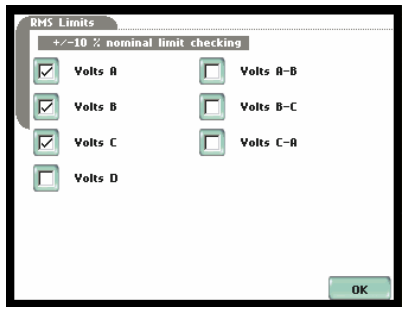
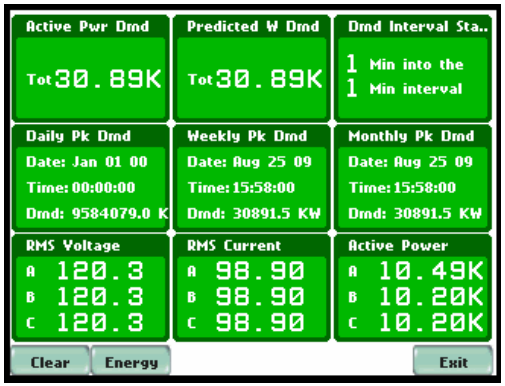
Feature Set

- **Measured, Trended & Triggered Parameters**
  - **Journal trending and triggers work as MAVOWATT 30**
    - 200ms resolution on V, I, W, VA, VAR, THD, Harmonics and other parameters
  - **Voltage and Current Power Quality is available but limited**
    - Sag/Dip & Swell only
    - Cycle by cycle detection
    - No waveforms are available. Text summary of events only
    - Thresholds are fixed to +/- 10% of nominal automatically detected or manually entered.
    - Customer cannot change PQ limits. Can turn PQ triggers on and off
  - **Flicker is not available**



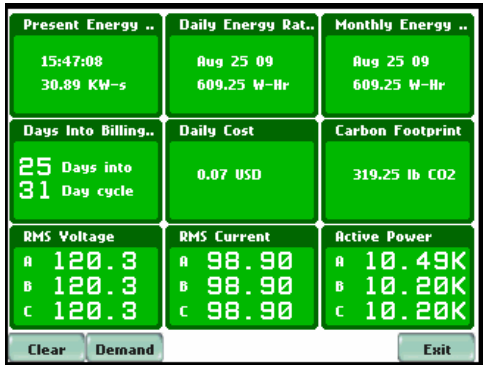
Demand Report

Easy to read reports summarize your survey

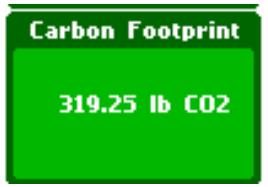


- **Present Demand**
  - Present demand of the circuit
- **Predicted Demand**
- **Demand Interval Status**
  - Shows time into the demand interval such as 11 minutes into a 15 minute interval
- **Daily, Weekly & Monthly Peak Demand time/date**
  - Customers can be billed on peak demand
  - This report shows the date and time of the peak demand for the current day, week and month
- **Real Time V, I, W meter**
  - Present metered values
  - Same as meter screen

Energy Report

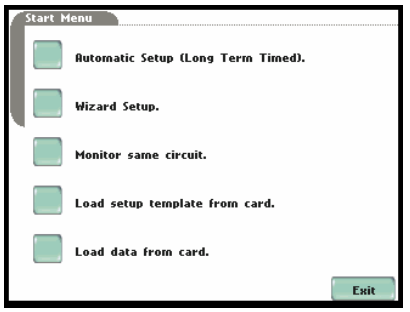


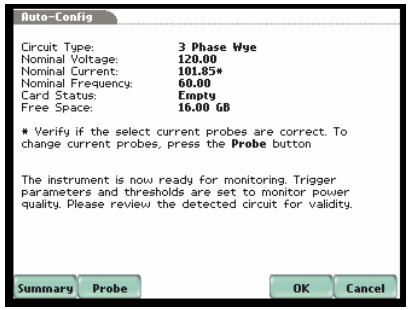
- **Billing cycle status**
- **Daily & Monthly Energy**
  - Easily know how much energy is used.
- **Carbon Footprint calculator**
  - Carbon Footprint represents the Carbon Dioxide CO2 produced generating electricity consumed.
  - Various generation methods have different carbon footprints, i.e. coal, gas, oil, nuclear, hydro, wind, solar generation have a different impact on the environment. The lower the number, the less CO2 produced.
  - Usually represented in pounds/KWh or Kg of CO2 per KWh consumed
  - Can be an average representing all types of generation used by the utility.
  - Example: Pacific Gas & Electric (California, USA) publishes a Carbon Footprint of 0.524 pounds CO2 /KWh of energy used.
- **Real Time V, I, W meter**
  - Present metered values
  - Same as meter screen

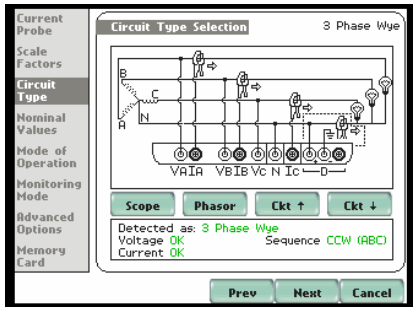


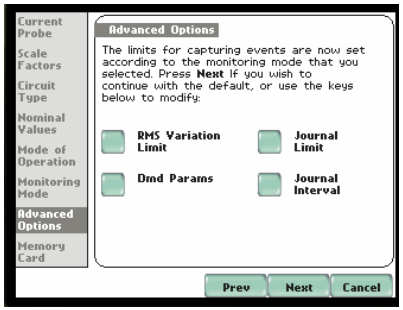
Setups

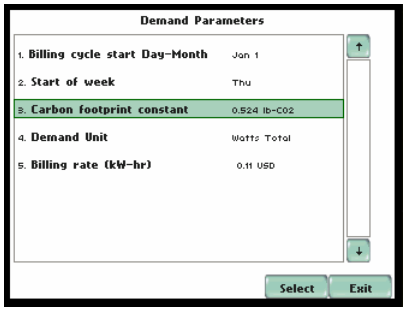
- **Automatic setups**
  - Automatic detection of Circuit Type
  - Factory default settings
  - User can select probe type
- **Manual Setups – Wizard**
  - Customize recording and reporting parameters
    - Journal triggers – High/Low limits
    - Journal intervals – Demand interval, power & harmonics intervals
    - Demand unit – W, VA, VAR
    - Carbon Footprint – Pound or Kg, multiplier







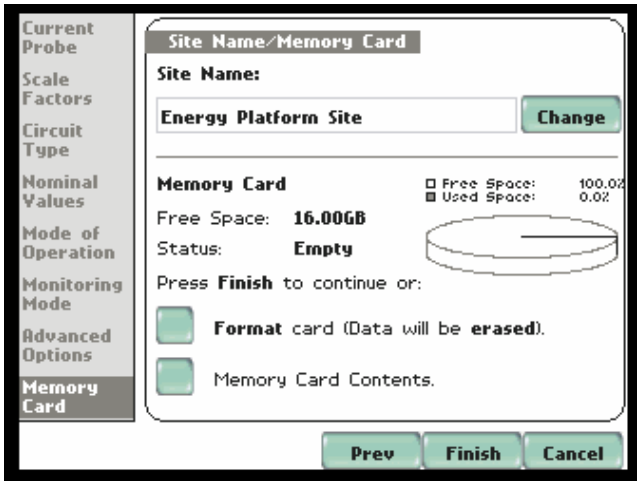




Setups

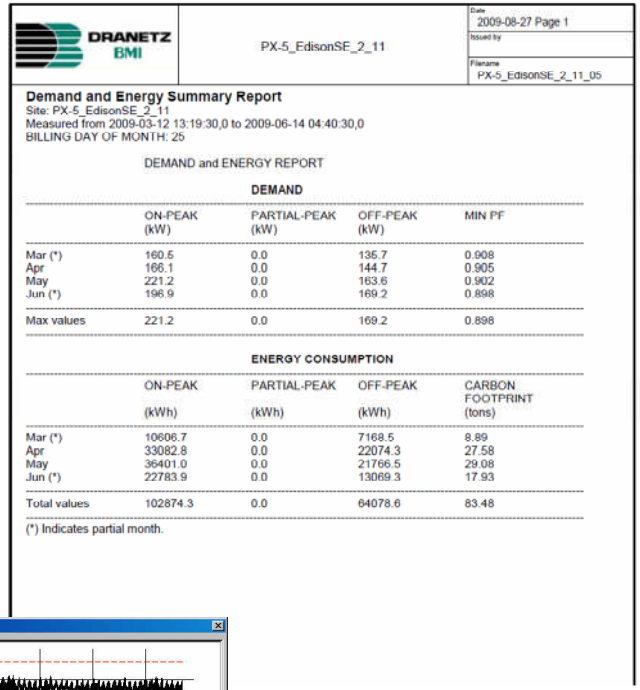
- **Compact Flash Data Storage**
  - 4GB (min) Compact Flash (CF) provided
  - Data and setups stored on CF card
  - Maximum file size is 256MB. Automatically starts a new file if fills during monitoring
  - CF Card is used to load data into the PC and for EPRW, DranView
    - Standard CF card reader used. USB, built into laptop, etc.

- **MAVOWATT 20 has the largest data storage of any manufacturer**



EPRW PC Software

- **E**nergy **P**latform **R**eport **W**riter **Software**
  - Included in package at no additional cost
  - Unlicensed – No HASP
  - Automatically produces an energy audit report in an RTF format
    - User selects time range of report
    - Includes Energy expense summary
    - Time Of Use Billing, Trended data
  - Export data to .CSV files for use in other software such as Excel



DRANETZ BMI

PX-5_EdisonSE_2_11

Date: 2009-08-27 Page 1
Issued by:
Filename: PX-5_EdisonSE_2_11_05

Demand and Energy Summary Report
Site: PX-5_EdisonSE_2_11
Measured from 2009-03-12 13:19:30,0 to 2009-06-14 04:40:30,0
BILLING DAY OF MONTH: 25

DEMAND and ENERGY REPORT

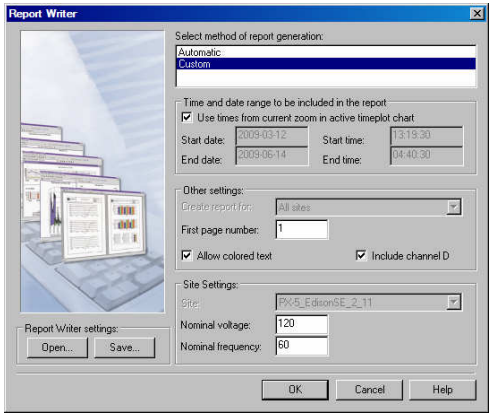
DEMAND

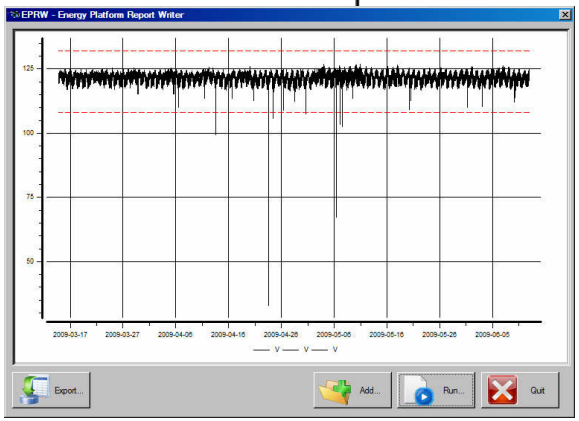
	ON-PEAK (kW)	PARTIAL-PEAK (kW)	OFF-PEAK (kW)	MIN PF
Mar (*)	160.5	0.0	136.7	0.908
Apr	166.1	0.0	144.7	0.905
May	221.2	0.0	163.6	0.902
Jun (*)	196.9	0.0	169.2	0.898
Max values	221.2	0.0	169.2	0.898

ENERGY CONSUMPTION

	ON-PEAK (kWh)	PARTIAL-PEAK (kWh)	OFF-PEAK (kWh)	CARBON FOOTPRINT (tons)
Mar (*)	10606.7	0.0	7168.5	8.89
Apr	33082.8	0.0	22074.3	27.58
May	36401.0	0.0	21766.5	29.08
Jun (*)	22783.9	0.0	13069.3	17.93
Total values	102874.3	0.0	64078.6	83.48

(*) Indicates partial month.





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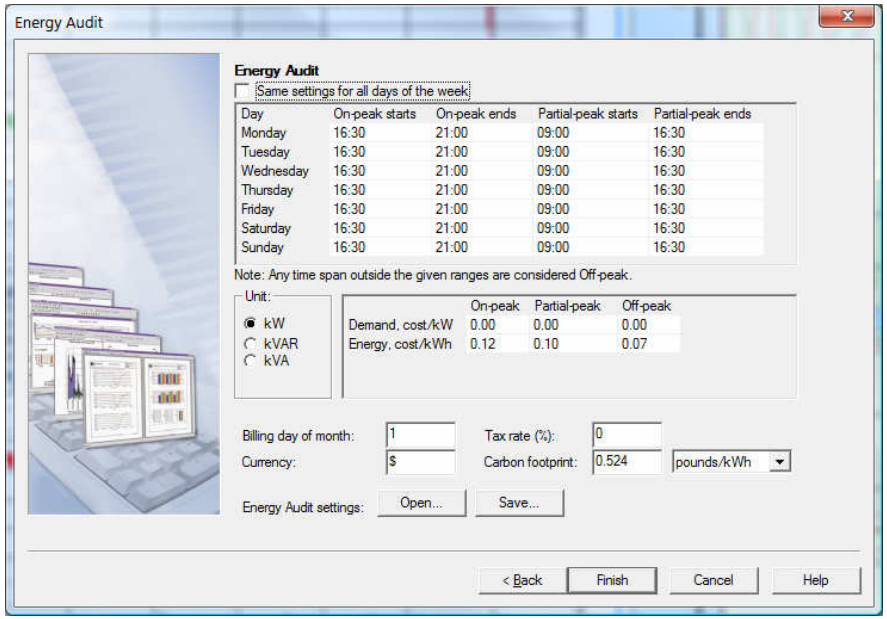
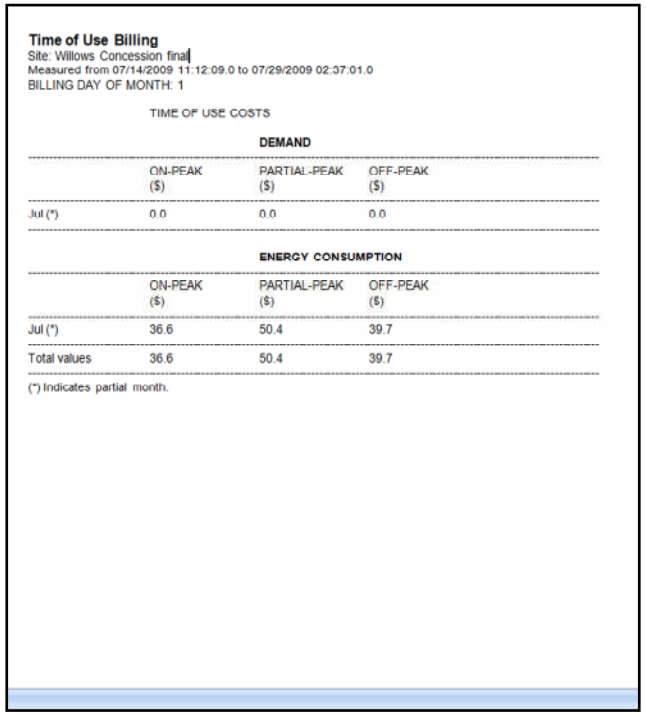
DranView PC Software

- **Optionally available for use with MAVOWATT 20**
- **New driver to read MAVOWATT 20 data**
- **New Energy Audit report added to the DV report writer**
  - Energy Audit report is similar to EPRW reporting features
  - Demand & Time Of Use reports





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Differentiation MAVOWATT Family

Application/Feature	*MAVOWATT 20*	*MAVOWATT 30*	*MAVOWATT 40*	*MAVOWATT 70*
Power Quality Testing (IEC61000-4-30 Class A, IEEE1159)		X	X	X
Energy/Load Surveys & Studies	X	X	X	X
Advanced Load Distortion and Imbalance				X
400 HZ Measurements				MW 70 - 400
Fault Recording / In-Rush			X	X
Motor Testing		X	X	X
Data Logging	X	X	X	X
Harmonic Analysis to 63rd (IEC61000-4-7, IEEE519)	X	X	X	X
Flicker per IEC61000-4-15, IEEE1453		X	X	X
High Speed Transient Capture				X
AnswerModules (motor health, cap switch, sag)			X	X
Measurement Inputs	Common Reference	Differential	Differential	Differential
Demand & Energy Reports	X			
Monitoring Modes	2	4	7	7
Pre/Fault/Post Cycles	0	100	10.000	10.000
Languages	11	11	11	11