

A Revenue-grade Energy Meter with Advanced Power Quality Analytics

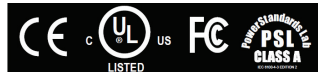
The ASCO Power Quality Meter helps reduce energy costs while increasing reliability and decreasing infrastructure cost. The device continuously records waveforms at high-speed and identifies transients, sags/swells and harmonics. Installation examples include generators, utility mains, transfer switches, UPS systems, paralleling gear, TVSS, PDUs, and critical power distribution switchboards.



Figure 1 : 5010 Remote Display Unit



Figure 2 : 5490 Mission Critical Power Quality Meter



| | 5410 Entry-Level | 5450 Advanced | 5490 Mission Control |
|----------------------------------------------------------|------------------|---------------|----------------------|
| 7000 SERIES Transfer Switch Accessories | Acc. 140L | Acc. 140LS | Acc. 140LX |
| 7000 SERIES Bypass-Isolation Transfer Switch Accessories | N/A | Acc. 140SB | Acc. 140XB |
| 7000 SERIES Power Control Accessories | ✓ | ✓ | ✓ |
| Standalone Enclosure/ Loose Units | ✓ | ✓ | ✓ |

Features:

- Continuous Waveform Recording (CWR) Technology provides complete data for accurate power quality analysis
- Millisecond time-stamp accuracy and synchronization for precise sequence of events analysis
- CWR Technology eliminates the need to setup any thresholds, triggers and events
- Automatic measurement compensation based on internal temperature monitoring ensures maximum accuracy
- Automated reports are generated for prescheduled periods and exported in COMTRADE and PQDIF (event reports), PDF, EXCEL, HTML and TXT (all other reports)
- Provides compliance testing to parameters in accordance with EN50160 and IEC 61000-4-15 / IEC 61000-4-30
- Real time monitoring with integrated web pages and alerts by email notifications

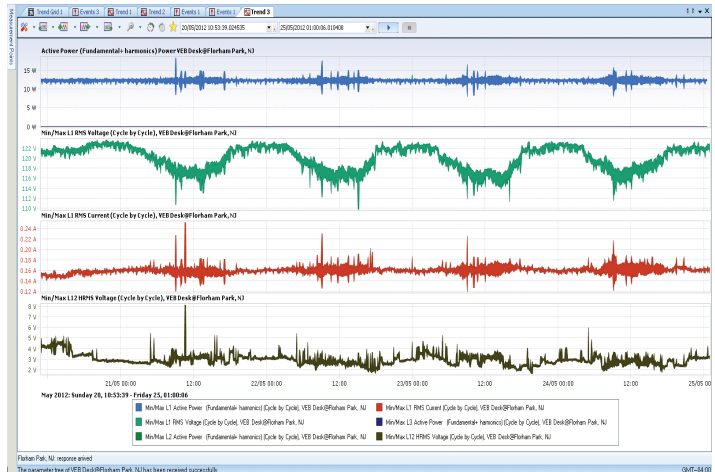


Figure 3: PowerQuest Analytics allows for analysis of continuously recorded waveforms, energy consumption, time-of-Use, flicker, harmonics, transients, sags/swells, crest and K-factor. It also aggregates sequence of events from multiple meters synchronized to the millisecond with ITC compliance curves. PowerQuest Analytics is available with the 5790 and 5900 Critical Power Management Systems.

ASCO 5400 SERIES Power Quality Meter Product Specifications

| Features | 5410 Entry-Level | 5450 Advanced | 5490 Mission Control |
|-----------------------------------------|-----------------------|-----------------------|-----------------------|
| Maximum Voltage Sampling Rate per Cycle | 256 | 512 | 1024 |
| Voltage Harmonics Up-to | 127th | 255th | 511th |
| Analog to Digital Converter | 16/20 bit | 16/20 bit | 16/20 bit |
| Internal Memory | 128MB | 4GB | 16GB |
| Transient Detection 50Hz / 60Hz | 78.1/65.1 μ s | 39/32.5 μ s | 19.5/16.3 μ s |
| Measurement During Overloading | x2 | x10 | x10 |
| Ethernet Ports | 2* | 2* | 2* |
| NTP Time Synchronization | Yes | Yes | Yes |
| PoE out to 5010 | Yes | Yes | Yes |
| IRIG-B Port(s)/ GPS RS232 Port(s) | - | 1 | 2 |
| Digital Inputs | - | 8 | 16 |
| Digital Outputs | - | 4 | 8 |
| Analog Inputs | - | 4 | 8 |
| Analog Outputs | - | 4 | 8 |
| Form "C" Relay Contacts | - | 3 | 6 |
| Dimensions | 6.87" x 9.12" x 5.41" | 6.87" x 9.12" x 6.76" | 6.87" x 9.12" x 8.07" |
| Weight | 5.41lbs | 6.40lbs | 7.10lbs |

*One ethernet port reserved for optional 5010 display.

General

| Real Time Measurements | |
|------------------------|---------------------------------------------------|
| Voltage/current | Per Phase and Neutral, Average, Unbalance |
| Power | Real, Reactive, Apparent, Power Factor, Frequency |
| Energy | Bi-directional, Total, Import, Export, Net |
| Demand: | Block, Rolling Block, Thermal, Predicted |
| Temperature Sensor | |
| Internal PSU | Informative |
| Internal DSP | Measurement Compensation |
| External | -40C to 99C |
| Time | |
| Synchronization Device | Accuracy |
| GPS | 100-200 μ s |
| IRIG-B | 100-200 μ s |
| DCF-77 | +/- 15 ms |
| SNTP Server | 50-100 μ s |
| Environmental | |
| Operating Temp | -4F to 158F (-20C to 70C) |
| Storage | -40F to 185F (-40C to 185C) |
| Pollution Degree | 2 |
| Insulation Category | II |
| Humidity | Max 95% non-condensing |

| I/O | |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------|
| Analog Inputs | 4-20mA (continuous DC), 25 ohm, 270V |
| Analog Outputs | 4-20mA (continuous DC), 0.1% Accuracy (10 bit D to A resolution) |
| Digital Inputs | Range: 0-220Vdc Triggers: Edge, Level, Debounce |
| Digital Outputs | 100V Max Voltage Edge, Level, Trigger, KYZ Pulse Out |
| Relay | 277VAC Max Voltage, 5A/250VAC, 10A/110VAC, 5A/30VDC, 10ms Max reaction time, 4 ms max drop-out time, 50mohm output resistance |

Sensing Inputs

| Voltage Inputs | |
|----------------------|--------------------------------------|
| Nominal Full Scale | 1KV |
| Maximum Peak | 8KV |
| Input Impedance | 3M Ω |
| Uncertainty | 0.1% of Nominal |
| Current Input | |
| Nominal Full Scale | 5A |
| Maximum Full Scale | 50A |
| Load/Burden | 0.07VA @ 100A, 0.0001VA @ 5A |
| Phase Shift | 0.42 degrees @ 3A, 0.17 degrees @ 5A |
| Uncertainty | 0.1% of Nominal |
| Frequency | |
| Range | 42.5Hz to 69Hz |
| Resolution | 10mHz |
| Accuracy | 10mHz |
| Control Power | |
| Operating Range | 100-260VAC: 50/60Hz 100-300VDC |
| Auxiliary DC Supply* | 48VDC |
| PoE In | According to 802.3af |

| Standards | |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement Standards | EN50160, IEEE1159, IEEE519, IEC61000-4-15, IEC61000-4-7, IEC61000-4-30 Class A, IEC62053-22/23 Class 0.2 |
| Electromagnetic Compatibility Standards | EN55011 Group 1 Class A, EN60439-1 (clause 7.9.1, 7.9.3, 7.9.4, 7.10.,3, 7.10.4), FCC Part 15 Subpart B Class A, IEC61000-3-3, EN61000-6-2, IEC60255 |
| Environmental Standards | IEC60068-2-1,2,6,11,27,30,75 |
| Safety Standards | UL508, EN61010-1: 2001 2nd Edition |