

Welcome to our Online Training! We will start at 10 AM.

NEW

PW9006 IEC Harmonic/Flicker
Measurement Function for PW4001

HIOKI

Product Introduction



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Training structure

- Length 20 - 25 min.
- All participants are muted
- Questions: Please enter your question in the Q&A function (chat function is disabled)
- Remaining questions will get answered by follow-up mail
- **This video will be recorded**
- **Video and ppt data will be shared with you and your teams**





PW9006 – IEC Harmonics/Flicker Measurement Option for PW4001

Product Introduction

HIOKI Europe, PM Department

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AGENDA

- **Key features**
- **Advantages of PW9006 with PW4001**
- **Applications & target industries**
- **Expanded usage of PW4001**
- **Price information**
- **Main take-aways**
- **Marketing information**
- **Q&A session**



PW9006 Key features

- Add-on function for the PW4001
- Adds IEC Harmonic / Flicker Measurement to the PW4001
- Measurements can be done in accordance with:
 - IEC 61000-4-7 Harmonics
 - IEC 61000-4-15 Voltage Fluctuation / Flicker
- Harmonics and Flicker measurement data can be saved in .CSV format for later analysis on a PC
- Same functionality as PW8001 Version 2.0 or higher



The IEC standards

IEC 61000-4-7:2002

Electromagnetic compatibility (EMC) - Part 4-7: Testing and measurement techniques
- General guide on harmonics and interharmonics measurements and instrumentation,
for power supply systems and equipment connected thereto

IEC 61000-4-15:2010

Electromagnetic compatibility (EMC) - Part 4-15: Testing and measurement
techniques - Flickermeter - Functional and design specifications

These standards describe how to measure, not to judge the results



Advantages of PW9006 on PW4001

- It makes the PW4001 more complete, it can measure:
 - Power consumption
 - Power efficiency
 - **IEC harmonics**
 - **IEC flicker**
- Check harmonic/flicker distortions in an early hardware development stage
- Pre-compliance measurement of harmonics/flicker can avoid high costs



Applications & target industries

EV charger market



Home appliances



Renewable power converters



Energy storage systems



Heat pumps, compressors



Data centers



Who are interested in IEC harmonic/flicker measurement?

- Power electronic engineers that design power supplies or other equipment that is powered by the grid. (everything with a power cord)
- Validation engineers that perform pre-compliance tests
- Power system commissioning engineers in data centers
- Service and maintenance engineers for renewable power converters and storage systems



Power Analyzer measurements in R&D and production

Measurement	Prototype	Design Validation (DVT)	Certification	Product Validation (PVT)
Voltage & Current	✓✓✓	✓✓	✓	✓
Active/Reactive/Apparent Power	✓✓✓	✓✓✓	✓✓	✓✓
Efficiency	✓✓✓	✓✓✓	✓✓	✓✓
Power Factor	✓✓	✓✓✓	✓✓✓	✓
Phase Angle	✓✓	✓✓	✓	○
Harmonics	✓✓	✓✓✓	✓✓✓	✓
THD	✓✓	✓✓✓	✓✓✓	✓
Motor Efficiency	✓✓	✓✓✓	✓	○
Switching Loss	✓✓✓	✓✓	○	○
Ripple Analysis	✓✓✓	✓	○	○
Inrush Current	✓✓	✓	○	✓
IEC 61000-4-7 Harmonics	✓	✓✓✓	✓✓✓	✓
IEC 61000-4-15 Flicker	○	✓✓✓	✓✓✓	○



Legend:

✓✓✓ = Primary activity
 ✓✓ = Frequently used
 ✓ = Occasionally used
 ○ = Rarely used

PA or PQA in Commissioning, Service & Maintenance

Measurement objective	Best instrument	Example customer needs (data centres, EV chargers)
Equipment / system performance	PW4001 + PW9006	Is my UPS 98.8% efficient?
		Is my PCS meeting its efficiency guarantee?
		Does my converter comply with IEC harmonic and flicker requirements?
		Why has converter efficiency dropped by 0.5%?
	PQ3198, with PW4001 + PW9006 for detailed follow-up analysis	Has the harmonic filter deteriorated over time?
Network behaviour	PQ3198	Why did the system trip at 03:17 yesterday?
		Is the utility causing voltage dips?
		Is a renewable source injecting unacceptable harmonics into the grid?



The PW4001 measures **how the equipment performs**, while the PQ3198 explains **how the electrical network behaves**.



PW9006 doesn't make the PW4001 a Power Quality Analyzer

- The IEC harmonic and flicker measurement is more accurate with the PW4001 than with a PQA
- The IEC harmonic and flicker functionality allow power electronics engineers to check if their design is likely to pass official harmonic and flicker compliance tests or not
- But it does not have typical PQA event triggering for voltage dips, voltage increases, interruptions or transients
- Neither does it give judgement, it measures harmonics, interharmonics and flicker in compliance with the related IEC standards



PW9006-01 price information

Model	Product name	Description	MSRP (€)
PW9006-01	IEC Harmonic/Flicker Measurement Function	IEC Harmonic/Flicker measurement function for the PW4001 Power Analyzer, IEC 61000-4-7 and IEC 61000-4-15 compliant, license card	1,898

Partners can purchase demo license with 50% discount

Main take-aways

The PW9006 IEC Harmonics/Flicker Function

- Makes the PW4001 more complete as power analyzer for validation and certification measurements in R&D and production
- IEC Harmonic/flicker measurement adds value in early stage of hardware design, product validation, commissioning and maintenance
- Applicable for all equipment that is connected to the power grid