Alfven™

RF Arc Detector and Pulse Monitor

For comprehensive RF pulse monitoring, Arc detection and categorisation

The Alfven 100 is an advanced, all-in-one diagnostic instrument for plasma arc detection and RF pulse monitoring. The Alfven architecture enables real-time processing of RF measurements with one microsecond resolution. It is designed to detect and characterise arcs while simultaneously monitoring every RF pulse to check that each pulse is within a predefined specification. Arcs and misfiring RF pulses can lead to wafer defects, therefore, the Alfven 100 is an essential tool for rapid troubleshooting and 24/7 monitoring.

Key Features

- 1 µs resolution for arcs and atypical pulses simultaneously (with adjustable noise filter).
- Configurable arc and pulse classification widgets.
- Monitors ON-time, pulse frequency and duty cycle of every pulse.
- Reports on deviations from user configured acceptance limits.
- ON-OFF and multi-level pulsing (up to 3 levels).
- Max., min. and average voltage and current reported during pulses to monitor "overshoot".
- "Snapshot" function to view pulse profile at a given time.
- Recipe function to instruct the sensor to adjust settings automatically to follow complex, multi-step plasma processes.

Key Benefits & Applications

- Quickly determine if arcs or atypical pulses are responsible for wafer defects.
- Pulse snapshot feature avoids inconvenient directional coupler-to-oscilloscope setup.
- Monitor average pulse frequency and duty cycle of each process step with the recipe feature.
- Monitor the number of arcs per process, which can lead to undesirable particle creation.
- On-board, intelligent data processing – microsecond data reported when requested.
- On-board memory to store data during network outage.
- Generates summary reports for your process.
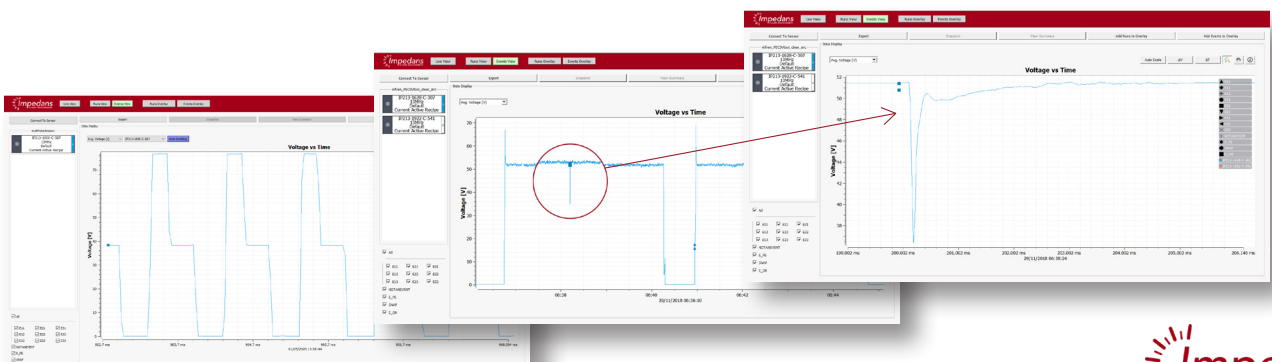
Model Specifications

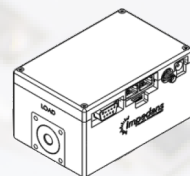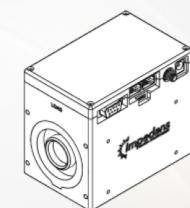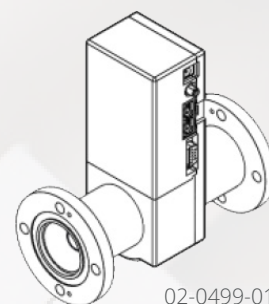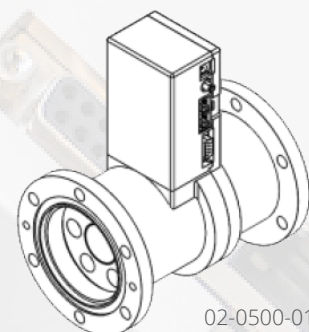| Model #	Fwd Power Range*	Frequency Range*	Connector Interface
02-0260-02	1.5 W - 12 kW	400 kHz - 121 MHz	QC Type
02-0496-01	1.5 W - 12 kW	400 kHz - 121 MHz	B6N Multicontact Socket
02-0497-01	1.5 W - 12 kW	400 kHz - 121 MHz	B20N Multicontact Socket
02-0499-01	3 W -30 kW	400 kHz - 121 MHz	EIA 1-5/8"
02-0500-01	9 W - 90 kW	400 kHz - 121 MHz	EIA 3-1/8"
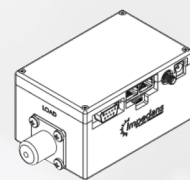
02-0260-01

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General Specifications

Sensor Characteristic Impedance	50 Ohms as standard
RF Connectors	QC, EIA and custom options
RF Power Range @ 50 Ohms impedance	Standard: 12 kW typical (connector dependent) High Power: 30 kW & 90 kW
Operating Temperature Range	10° C - 80° C, calibrated versus temperature
Sensor Power Requirements	15-24 V DC, 0.5 A
Communication Interfaces	Micro USB, RJ45x2
Connectivity (Impedans Software)	Ethernet
Communication Protocols (Standard)	HTTP Web Service
Parameter Report Rate	10 Samples/second
Onboard Data Storage	14 hours of average data plus up to 5000 atypical pulse or arc events

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Voltage & Current Specifications

Voltage Range (Typical)	0.3 V to 3000 V_{RMS}, custom available
Voltage Resolution	0.1 V_{RMS}
Current Range	2.5 mA_{RMS} to 9 A_{RMS}, custom available
Current Resolution	2.5 mA_{RMS}
Voltage & Current Accuracy	Uncalibrated

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Arc & Pulse Monitoring Specifications

Arc Duration Detection Range	1 µs to 5000 µs
Arc Amplitude Range (vs Moving Average)	1% to 100% change
Arc Categories (customisable)	9 (3 time duration ranges x 3 amplitude ranges)
Pulse Frequency Detection Range	5 Hz to 100 kHz
Pulse Level Monitoring	Upto 3 levels (Ex. Power high, Medium, Off)
Pulse Timing Resolution	1 µs
Pulse Parameters Reported	Pulse frequency, Duty cycle (of each pulse level), Average, Max & Min voltage and Current in each level
Max. Number of Recipe Steps	40 steps

*Custom options available

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 N Type (M)   N Type (F)   HN (M)   HN (F)   C Type   7/16 (F)   7/16 (M)   LC (M)   LC (F)   EIA (M)   EIA (F)