Alfven™ 100
RF Event Detector

Precision Pulse Monitor and Arc Detector
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

<table>
<thead>
<tr>
<th>Model #</th>
<th>Fwd Power Range*</th>
<th>Frequency Range*</th>
<th>Connector Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>02-0260-01</td>
<td>1.5 W - 12 kW</td>
<td>400 kHz - 121 MHz</td>
<td>QC Type</td>
</tr>
<tr>
<td>02-0495-01</td>
<td>0.5 W - 5 kW</td>
<td>40 kHz - 400 kHz</td>
<td>QC Type</td>
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<tr>
<td>02-0496-01</td>
<td>1.5 W - 12 kW</td>
<td>400 kHz - 121 MHz</td>
<td>B6N Multicontact Socket</td>
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<tr>
<td>02-0497-01</td>
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<td>400 kHz - 121 MHz</td>
<td>B20N Multicontact Socket</td>
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<td>02-0498-01</td>
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<td>400 kHz - 121 MHz</td>
<td>B20N Multicontacts</td>
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<td>02-0499-01</td>
<td>3 W -30 kW</td>
<td>400 kHz - 121 MHz</td>
<td>EIA 1-5/8&quot;</td>
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<tr>
<td>02-0500-01</td>
<td>9 W - 90 kW</td>
<td>400 kHz - 121 MHz</td>
<td>EIA 3-1/8&quot;</td>
</tr>
</tbody>
</table>

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): USB 2.0, Ethernet

Communication Protocols (Standard): USB 2.0, HTTP Web Service

Communication Protocols (OEM Options): EtherCAT, EtherNet/IP

Parameter Report Rate: 10 Samples/second

Onboard Data Storage: 14 hours of average data plus up to 5000 atypical pulse or arc events

Voltage & Current Specifications

Voltage Range (Typical): 0.3 V to 3000 VRMS, custom available

Voltage Resolution: 0.1 VRMS

Current Range: 2.5 mA RMS to 25 A RMS, custom available

Current Resolution: 2.5 mA RMS

Voltage & Current Accuracy: Uncalibrated

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