Impedans
PLASMA MEASUREMENT

# Alfven™

## RF Arc Detector and Pulse Monitor

## For comprehensive RF pulse monitoring, Arc detection and categorisation

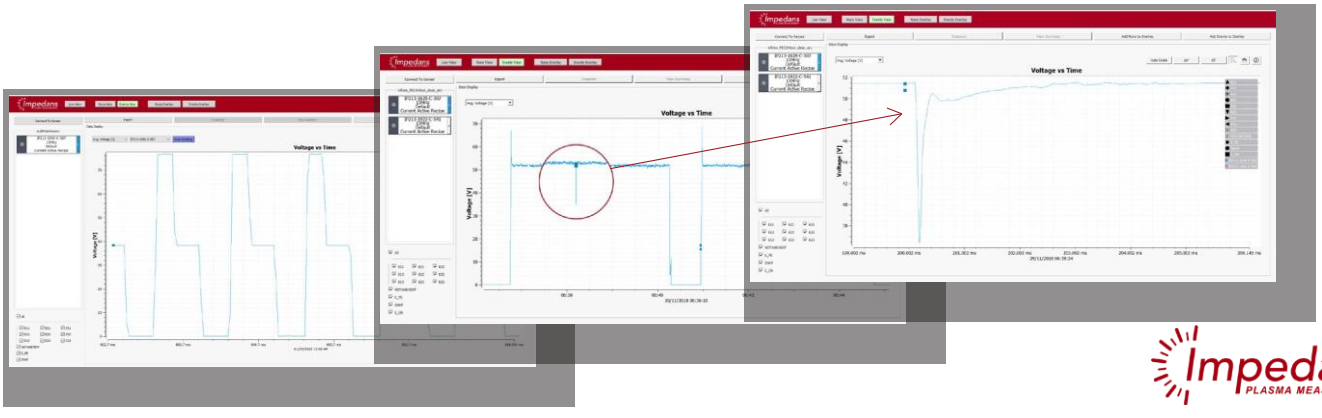
The Alfven is an advanced, all-in-one diagnostic instrument for plasma arc detection and RF pulse monitoring. The Alfven architecture enables real-time processing of RF measurements with one microsecond resolution. It is designed to detect and characterise arcs while simultaneously monitoring every RF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



Impedans
PLASMA MEASUREMENT

## Model Specifications

| Model # | Fwd Power Range* | Frequency Range* | Connector Interface |
|---|---|---|---|
| 02-0260-01 | 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 |
| 02-0498-01 | 1.5 W - 12 kW | 400 kHz - 121 MHz | B20N Multicontacts |
| 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" |

## 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)<br>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 |

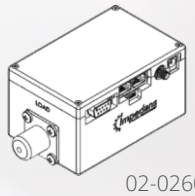
## Voltage & Current Specifications

| | |
|---|---|
| Voltage Range (Typical) | 0.3 V to $1850\ V_{pk}$, 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 |

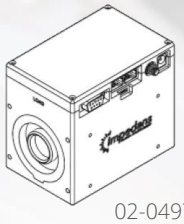
## Arc & Pulse Monitoring Specifications

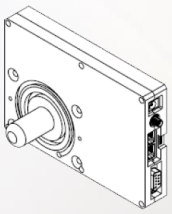
| | |
|---|---|
| Arc Duration Detection Range | 1 µs to 5000 µs |
| Arc Amplitude Range (vs Moving Average) | 1% to 100% change |
| Arc Categories (customisable) | 9 (3 time duration ranges x 3 amplitude ranges) |
| Pulse Frequency Detection Range | 5 Hz to 100 kHz |
| Pulse Level Monitoring | Upto 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 |

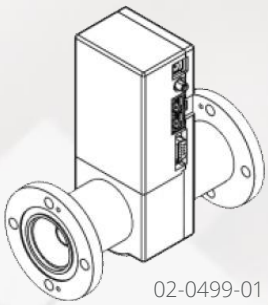
*Custom options available

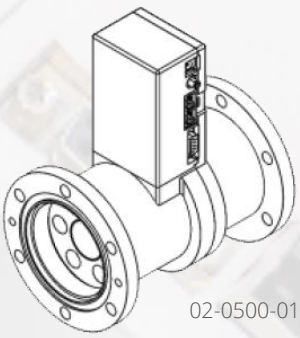

02-0260-01


02-0496-01


02-0497-01


02-0498-01


02-0499-01


02-0500-01

+353 1 842 8826 | sales@impedans.com | www.impedans.com