- Compact arc detector box with keypad for test/ reset & configuration
- Very high light sensitivity < 1 Lux
- Fast arc response time < 2µs
- 2x FSMA input for fiber optic cable
- 2x Optical and electrical interlock signal
- Optical test signal
- Photo detector voltage monitor
- Option: adjustable light sensitivity and auto-reset time via USB interface

1. Product Introduction

The **ARC1 2.0** arc detector is a compact electrical device for very fast and highly sensitive light and arc detection, using a wide-spectrum photo diodes. It is designed to effectively protect high-power RF equipment from damage due to unwanted electrical breakdown, corona discharge and arcing.
The dual channel version of ARC1 2.0 provides two optical arc detector input ports (FSMA), CH1 and CH2. Arcs are signaled in three ways: (1) visually indicated by bi-colored LEDs at the front panel, (2) via a digital electrical output signal (TTL or Open Collector), and (3) via an optical output signal. A global arc output signal (*GLBARC*) offers a system interlock signal by applying a logical OR-combination of both arc channels. Function keypads at the front panel as well as a D-SUB 15 remote control interface allow testing, resetting and customizing the device. The testing of the device is offered in two ways: (1) an internal self-test and (2) an optical test signal for external use. For safety reason the device comes with a power/system failure signal. Analog outputs allow access to the photo voltages of the detectors for monitoring and analysis purpose.
As an option to be ordered separately, the *ARC1 – USB Interface Access 2.0* (serial terminal) enables the adjustment of light sensitivity (threshold) and auto-reset time. It also allows coincidental arc detection by using an AND logic in the dual-channel operation mode.
Low-loss fiber optic cables are used to transmit/send light to/from the ARC1 unit. Cables are available in different standard length as accessories.

2. Product Features	Description
■ Optical arc input (analog)	2x FSMA (CH1, CH2)
■ Optical arc output (digital)	2x FSMA (CH1, CH2)
■ Electrical arc output (digital)	2x TTL, 2x Open Collector
■ Global arc output *GLBARC* (digital)	1x TTL, O.C., *GLBARC* = (CH1) AND (CH2)
■ Photo-detector voltage (analog)	2x, voltage proportional to the detected light intensity
■ Visual arc/status indication	2x LED (red/ green)
■ Optical self-test	via keypad or remote control
■ Optical test signal	1x FSMA output, LED 600nm, 100 µs pulse length
■ Reset options	manual reset (default) via button or auto-reset, configurable
■ Signal polarity setting	normal or inverted (default), configurable
■ Power failure signal	1x open collector

3. Optional Product Features	Description
USB Interface Access	serial terminal connection
■ Adjustable light sensitivity	variable threshold voltage for trigger stage
■ Configurable auto-reset time	0.1 ms to 3 s
■ AND-Logic	coincidental arc detection wit *GLBARC* = (*CH1*) AND (*CH2*)

4. Main Characteristics		Description
Wavelength of optical input detector		400 nm to 1000 nm
Wavelength of optical output signal		880 nm
Wavelength of optical test signal		600 nm
Light intensity for detection		< 1 Lux (correspond to ≤ 25 mV photo voltage)
Light sensitivity level (threshold)		20 mV (default)
		adjustable with software option from 20mV to 500mV (nominal)
Response time (TTL)		< 2 µs, for typical arc light
		< 3 µs, factory tested with an LED light source at 880 nm
Auto reset time		1 s by default, if activated. Auto reset is off by default.
		Configurable with software option from 0.1 ms to 3 s.
Electrical signal ratings		
	TTL	> 2.4 V (high), < 0.7 V (low)
	Open Collector	50 V, 100 mA max.
	Remote inputs	5 V, 10 mA, 0.5 s
Mains power supply		220-240 VAC / 50 Hz and 100-120 VAC / 60 Hz, universal
		internal fuse 1 A, time delay
Temperature range	Operating	0°C to +50°C
	Storage	-40°C to +85°C
Dimensions		180 x 112 x 46 mm^2
Weight		500 g approximately
Safety Class		IP40

5. Interfaces		Description
Optical arc inputs		
	ARC IN – CH1	FSMA, ¼”-36 UNS 2A male thread
	ARC IN – CH2	FSMA, ¼”-36 UNS 2A male thread
Optical arc outputs		LED 880 nm
	ARC OUT – CH1	FSMA, ¼”-36 UNS 2A male thread
	ARC OUT – CH2	FSMA, ¼”-36 UNS 2A male thread
Optical test signal output		LED 600 nm, 100 µs pulse length
	ARC Test	FSMA, ¼”-36 UNS 2A male thread
Electrical arc output signal (*GLBARC*)		TTL or Open Collector (configurable)
	ARC Out	BNC, female
Control Signals		D-SUB 15, female, see section 6. for details
USB		USB Type B, USB 2.0
MAINS		IEC-600320-C14 (male)

6. Control Signals		Description
Pin No.:	Signal Description:	Signal Level:
1	CH1 arc output signal	Open Collector
2	CH2 arc output signal	Open Collector
3	Power/system failure	Open Collector
4	CH1 arc output signal	TTL
5	CH2 arc output signal	TTL
6	*GLBARC*	TTL or Open Collector (configurable), same as *ARC Out*
7	CH1 photo voltage	mV output, 4V max. (saturation)
8	CH2 photo voltage	mV output, 4V max. (saturation)
9	+5V supply voltage	+5 V output, 100 mA max.
10	Test CH1, remote input	5 V, 10 mA, 0.5 s
11	Test CH2, remote input	5 V, 10 mA, 0.5 s
12	Test EXT, remote input	5 V, 10 mA, 0.5 s
13	RESET, remote input	5 V, 10 mA, 0.5 s
14	GND remote*	remote ground for remote inputs Pin 10..13*, galvan. isolated
15	GND	internal device ground

Note : * Remote ground Pin 14 has to be connected to device ground Pin 15, if the internal +5V voltage (Pin 9) is used to supply the galvanically isolated inputs Pin 10..13.

7. Conformity		Description
■ CE Directives		
	2014/35/EC	Low Voltage
	2014/30/EC	EMC
	2011/65/EC	RoHS

8. Accessories (included)	Description
Mains cable	IEC-60320-C13 (female), plug type F (CEE 7/4), 2m length
Mounting brackets	2x clamping bracket
Connector kit	D-SUB 15 male connector

9. Order No.	Description
A1-2-DC-00	ARC1 - Dual Channel Arc Detector 2.0
A1-2-USB-00	ARC1 - USB Interface Access 2.0 (Option)

Rev.	Remark	Date	Name
00	Initial	27.03.2018	C. Weil
01	Details on software options: sensitivity and auto reset time	09.01.2019	C. Weil
02	USB Interface Access (serial terminal)	18.02.2019	C. Weil