



- Compact arc detector box with keypad for test/ reset & configuration
- Very high light sensitivity < 1 Lux
- Fast arc response time < 2µs
- 1x FSMA input for fiber optic cable
- 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 diode. It is designed to effectively protect high-power RF-equipment from damage due to unwanted electrical breakdown, corona discharge and arcing.

The single channel version of ARC1 2.0 provides one optical arc detector input port (FSMA). 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. 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. An analog output allows access to the photo voltage of the detector for monitoring and analysis purpose.

As an option to be ordered separately, the *ARC1 2.0 USB Interface Access* (serial terminal) enables an adjustment of light sensitivity (threshold level) and auto-reset time for customized needs.

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)	1x FSMA input (CH1)
■ Optical arc output (digital)	1x FSMA output (CH1)
■ Electrical arc output (digital)	1x TTL, 1x open collector output (CH1)
■ Photo-detector voltage (analog)	voltage proportional to the detected light intensity
■ Visual arc/status indication	LEDs (red/ green)
■ Optical self-test	via CH1 button or remote control
■ Optical test signal	1x FSMA output, LED 600nm, 100µs 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 of trigger stage
■ Configurable auto-reset time	0.1 ms to 3 s

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 (corresponds 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. Configurable with software option from 0.1 ms to 3 s. Auto reset is off by default.
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		164 x 112 x 46 mm ³
Weight		580 g ± 10%
Safety Class		IP40

5. Interfaces		Description
Optical arc input		
	<i>ARC IN – CH1</i>	FSMA, ¼"-36 UNS 2A male thread
Optical arc output		
	<i>ARC OUT – CH1</i>	FSMA, ¼"-36 UNS 2A male thread
Optical arc test signal output		
	<i>ARC Test</i>	FSMA, ¼"-36 UNS 2A male thread
Electrical arc output		
	<i>ARC Out</i>	TTL or Open Collector (configurable) BNC, female
<i>Control Signals</i>		
<i>USB</i>		D-SUB 15, female, see section 6. for details
<i>USB</i>		USB Type B, USB 2.0
<i>MAINS</i>		IEC-600320-C14 (male)

6. Control Signals		Description
Pin No.	Signal Description:	Signal Level:
1	CH1 arc output signal	Open Collector
2		
3	Power/system failure	Open Collector
4	CH1 arc output signal	TTL
5		
6		
7	CH1 photo voltage	mV output, 4V max. (saturation)
8		
9	+5V supply voltage	+5 V output, 100 mA max.
10	Test CH1, remote input	5 V, 10 mA, 0.5 s
11		
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 and 2015/863/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 with 2 holes $\varnothing = 4.4\text{mm}$ each
Connector kit		D-SUB 15 male connector

9. Order No.		Description
A1-2-SC-00		ARC1 - Single Channel Arc Detector 2.0
A1-2-USB-00		ARC1 - USB Interface Access 2.0

Rev.	Remark	Date	Name
00	Release	26.03.2018	C. Weil
01	Details on USB options: sensitivity and auto reset time	09.01.2018	C. Weil
02	USB Interface Access (serial terminal)	18.02.2019	C. Weil
03	RoHS update	28.01.2023	C. Weil
04	Accessories, size, weight updated	26.04.2024	J. Schwarzhorn