

## SPARK TEST APPARATUS

FOR INTRINSICALLY SAFE CIRCUITS – Ex I – IEC 60079-11

### MAIN SPECIFICATIONS:

<b>Design</b>	Compact design
<b>Spark chamber volume</b>	≈ 1000 cm <sup>3</sup>
<b>Lock system</b>	security clamping device
<b>Automatic ignition detection</b>	built in optical sensor with ambient light calibration
<b>Chamber maximum pressure</b>	P <sub>max</sub> > 25 Bar
<b>Safety valves</b>	Incorporated safety valves P <sub>max</sub> > 80 Bar
<b>Automatic stop</b>	ignition detection procedure completed
<b>Internal safety</b>	high pressure safety valves on the gas, air and purging inputs
<b>Rotating cadmium disk holder</b>	double sealed and chromed
<b>Electrode material</b>	tungsten wires
<b>Electric motor</b>	brushless swiss made motor with internal gearing and rotation calibration
<b>Gear wheels</b>	50:12 ration made of copper and ZX-100 material
<b>Rotating connectors</b>	resistance below 1mΩ and 8-point contact
<b>Electric terminals</b>	external banana plugs testing current up to 10A (optional)
<b>Fusing instrument</b>	tungsten wire cutting device with safety protector cover
<b>Gas Mixing Device</b>	mixtures I, IIA, IIB, IIC safety factor x1 mixtures I, IIA, IIB, IIC safety factor x1,5



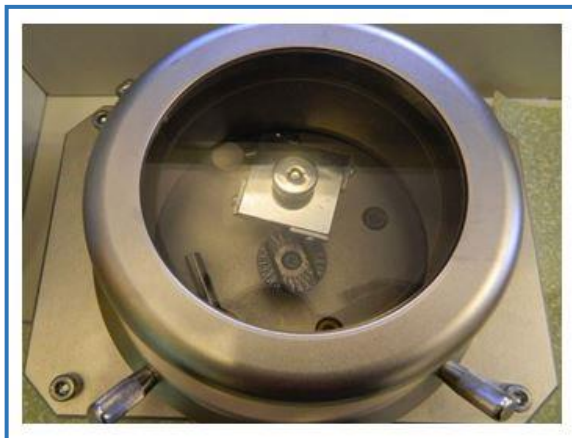
### MAJOR BENEFITS

- All in One design
- Automatic ignition detection & pressure release to the outlet tube
- User control with 17" Touch screen display
- 2 pairs of lock keys
- Built in flame arresters
- Tungsten wire fusing instrument
- Internal automatic calibration unit for every gas group
- Automatic pressure release and automatic purging after ignition

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<b>Automatic disk conditioning</b>	20000 revolutions or configured manually
<b>Weight</b>	100 [kg]
<b>Dimensions (WxDxH)</b>	1294 x 782 x 630 [mm]
<b>Power supply</b>	230 VAC



### TUNGSTEN WIRE FUSING INSTRUMENT:

Tungsten bare wire must be fused to make short electrodes

Design according to: IEC 60079-11:2011

230 VAC design

Output 7,2V 25A

Chromed contacts

Protective thick plastic cover and safety switch

### CADMIUM DISK AND ELECTRODE HOLDER:

Brushless electric motor 80 rpm

Gear wheels ratio: 50:12 made of copper and ZX-100 material

Due the high quality materials used for gear wheels, they do not need to be replaced

Rotating connectors with contact in 8 points on the shafts

Resistance below 1mΩ

Tungsten electrode holder double sealed and chromed surface

Cadmium disk holder double sealed and chromed surface



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## SPARK TEST APPARATUS MAIN WINDOW

**GAS**

I IIA IIB IIC

**Mixture gases**

Methane - Air

**Safety factor**

1.0 1.5

**Test phase revolutions**

400


**Calibration revolutions**

440

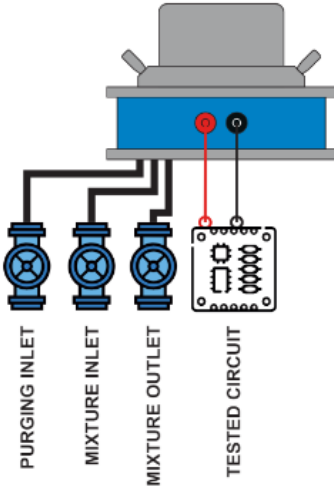
**Polarity reversal**

Save

**Spark Test Aparatus**  
**IEC 60079-11**

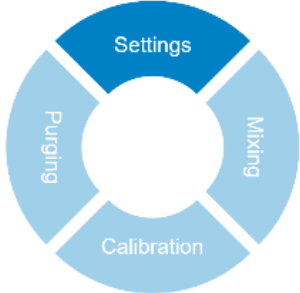


**EXVA**  
Testing & Certification Ltd.



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**EQUIPMENT SENSITIVITY TEST**



Settings Purging Mixing Calibration

Ready for test

RESET START Sensitivity Test

**Calibration Circuit CHECK**

**No\* rotation**

20000 SET

**Conditioning Status**

0 RUN

**CADMIUM DISK conditioning**

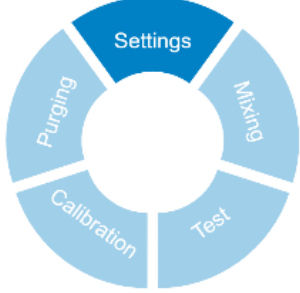
**GAS**

I IIA IIB IIC

**Safety factor**

1.0 1.5 START

**EXTERNAL INPUT TEST**



Settings Purging Mixing Calibration Test

Ready for test

RESET START Test

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<b>MAIN WINDOW SETTINGS:</b>	
<b>GAS</b>	Selects the required gas group
<b>Mixture gases</b>	If shows the gas corresponding to the gas group - if the safety factor is 1.5, the user can choose between AIR/O2 for Hydrogen mixing
<b>Safety factor</b>	Select 1,0 or 1,5 safety factors
<b>Test phase revolutions</b>	Setting the number of revolutions according to standard 60079-11
<b>Calibration revolutions</b>	Setting the number of revolutions according to standard 60079-11
<b>Polarity reversal</b>	Selects the AC / DC mode
<b>Save</b>	Saving the settings
<b>No* rotation</b>	Number of rotations of the motor for Cadmium disk conditioning
<b>SET</b>	Set the rotation value
<b>Conditioning status</b>	Actual rotation value
<b>RUN</b>	CADMIUM DISK conditioning start
<b>GAS (Calibration Circuit CHECK)</b>	Selects the required gas group
<b>Safety factor (Calibration Circuit CHECK)</b>	Select 1,0 or 1,5 safety factors
<b>START (Calibration Curcuit CHECK)</b>	Measuring the values of the voltage and the current of the calibration circuit for every gas group
<b>START Sensitivity Test</b>	Start Sensitivity Test process
<b>RESET (Sensitivity test)</b>	Reset sensitivity Test process
<b>START Test</b>	Start External input test process
<b>RESET (EXTERNAL INPUT TEST)</b>	Reset External input test process

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### Value & Quality Award winner in the year 2020

In 2020 both the *High capacity precision digital gas mixer*, *precision digital gas mixer* and the *Spark test apparatus for intrinsically safe circuits* won the Value & Quality Award.





## **SPARK TEST APPARATUS**

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### **ACCESORIES:**

sight glasses

sealing gasket for sight glasses 1 set

sealing gasket for explosion chamber 1 set

sealing gasket for the shafts 1 set

cadmium disk 1 pc.

tungsten electrodes 4 pieces

tungsten wire cutting device

flexible tubing

pressure reducer for air inlet

pressure reducer for gas inlet