

## 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
<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 safety factor x1,5



### MAJOR BENEFITS

- All in One design
- Automatic ignition detection & pressure release to the outlet tube
- User control with 21,5" Full HD 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
- Incorporated Gas Mixing Unit which can be used separately



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<b>Automatic disk conditioning</b>	20000 revolutions or configured manually
<b>Weight</b>	140 Kg
<b>Dimensions (WxDxH)</b>	1200 x 750 x 1600 [mm]
<b>Power supply</b>	230 VAC



### TUNGSTEN WIRE FUSING INSTRUMENT:

Tungsten bare wire must be fused to make short electrodes

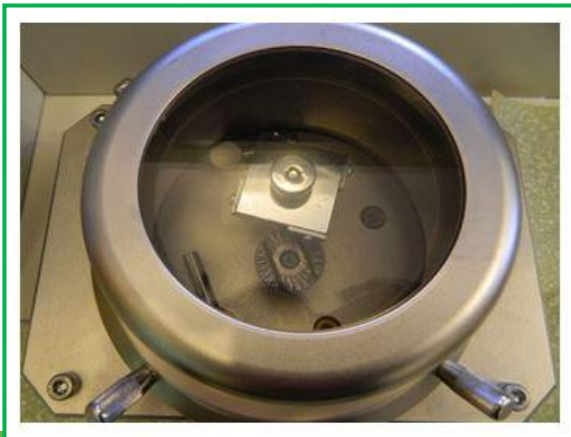
Design according to: IEC 60079-11:2011

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

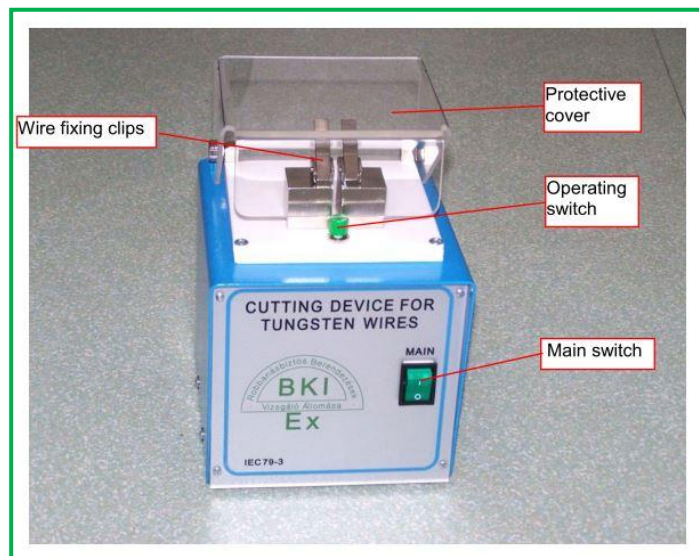
Due the high quality materials used for gear wheels, they do not need to be replaced

Rotating connectors with contact in 8 points on the shafts

Resistance below 1mΩ

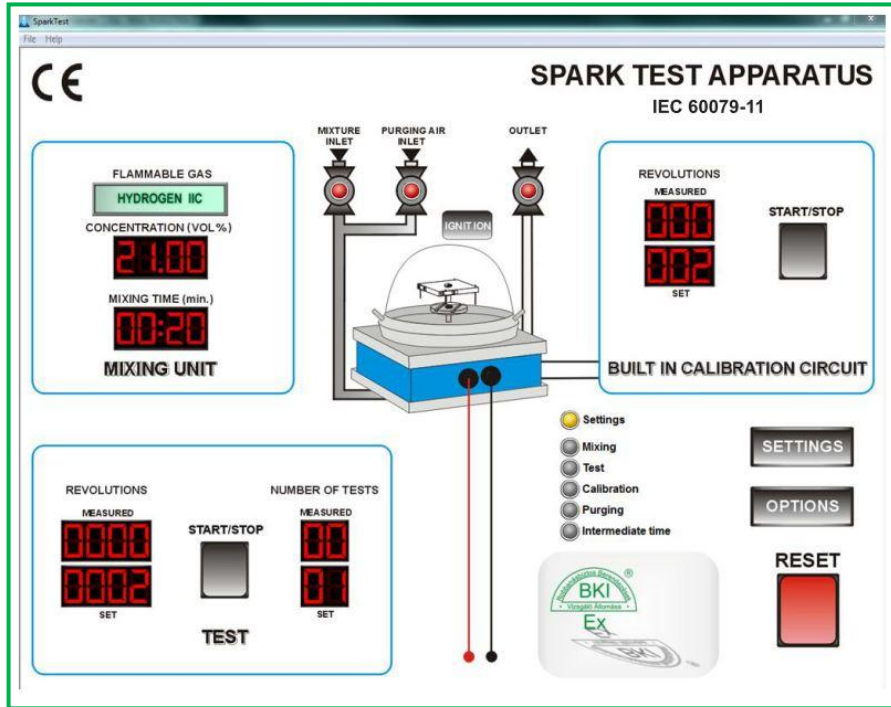
Tungsten electrode holder double sealed and chromed surface

Cadmium disk holder double sealed and chromed surface



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### SPARK TEST APPARATUS MAIN WINDOW

#### MAIN WINDOW SETTINGS:

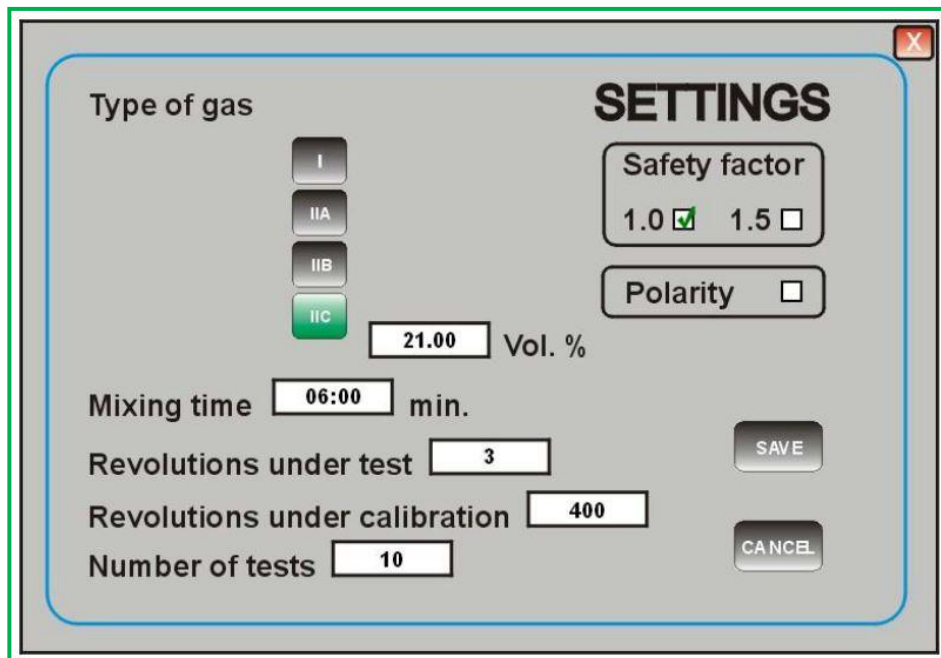
<b>LCD DISPLAY</b>	mixing, test and built in calibration windows
<b>MIXING UNIT WINDOW</b>	shows the adjusted concentration and mixing time
<b>TEST WINDOW</b>	shows the measured rotations adjusted, the taken rotations and the number of tests
<b>BUILT IN CALIBRATION CIRCUIT</b>	shows the required revolutions according to the standard and the number of rotations taken at the calibration phase

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### SETTINGS BUTTON MENU:

<b>TYPE OF GAS</b>	selects the required gas group
<b>VOL %</b>	shows the selected concentration ( it can be selected and adjusted manually not only for the gas groups)
<b>SAFETY FACTOR</b>	select 1,0 or 1,5 safety factors
<b>POLARITY</b>	selects the AC / DC mode
<b>MIXING TIME</b>	the mixing time can be adjusted (the default time is 6 min.)
<b>REVOLUTION UNDER TEST</b>	setting the number of revolutions according to standard 60079-11
<b>REVOLUTION UNDER CALIBRATION</b>	setting the number of revolutions according to standard 60079-11
<b>NUMBER OF TESTS</b>	possible to make complete automatic tests
<b>SAVE</b>	saving the actual settings



**SETTINGS**

Type of gas: I, IIA, IIB, IIC

Safety factor: 1.0  1.5

Polarity:

21.00 Vol. %

Mixing time: 06:00 min.

Revolutions under test: 3

Revolutions under calibration: 400

Number of tests: 10

SAVE CANCEL

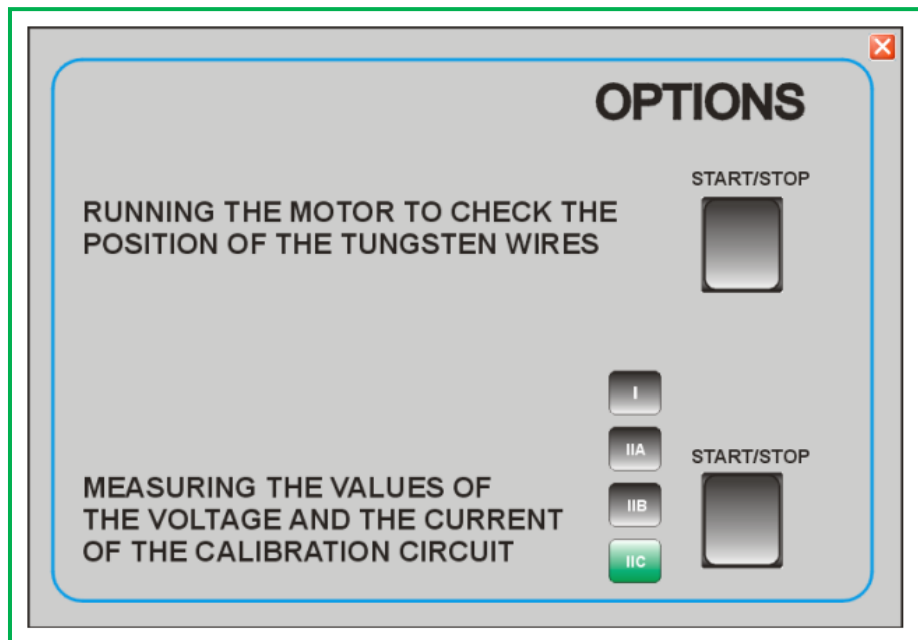
### SPARK TEST APPARATUS SETTINGS WINDOW

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### OPTIONS BUTTON MENU:

<b>START / STOP (UPPER)</b>	running the motor to check the position of the tungsten wires
<b>START / STOP (LOWER)</b>	measuring the values of the voltage and the current of the calibration circuit for every gas group



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### GAS MIXING DEVICE:

#### MAIN ADVANTAGES:

- very high precision
- complex and microprocessor controlled mixing operation
- can be used for other applications also ( testing gas sensors, producing different gas mixes other than I, IIA, IIB, IIC)
- 8 mm flexible tubing
- incorporated cutt-off valves
- 2 stepping motors for precise mixing
- 2 stainless steel pistons for long service life
- 2 cylinders made of aluminum and teflon coated for anti friction
- front U-tube manometer and 2 needle valves to control the flow rate of the gas and the air inlet

#### 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

