

AC/DC 6/12/24/36kV Medium Voltage Live Line Detector/Indicator. MVDZ

FEATURES

- AC/DC detection from 40V to 40kV
- Pulsating light indication
- Front panel operation
- System auto-test
- Phase-neutral operation
- Partial discharge free
- High tolerance to overvoltages
- Extremely low input current
- Years of operation on a single battery

APPLICATIONS

- Distribution equipment
- Trapped charges in capacitor banks
- MV Substations
- Rail guns
- Electric ships
- DC medium voltage grids
- MV Motors



DESCRIPTION

The MDVZ voltage presence indicator provide a means to detect visually the presence of AC/DC voltage in medium voltage lines, capacitors or busbars. This design is based on an insulator and a control panel connected by a cable whose length is user-selectable. Safety and insulation coordination is maintained by a large epoxy insulator and vacuum casted series resistors inside it that make up $405M\Omega$ in total resistance. It will detect AC as well as DC, something that is becoming of increasing importance in modern networks, as evidenced for example in the recent IEEE 1709 Medium Voltage DC on Ships standard.

The high resistive impedance of the detector makes partial discharges virtually inexistent, also making this detectors extremely tolerant to input over voltages.

The control panel is operated by a frontal push-button and powered by an internal 9V battery that under normal conditions will last a minimum of 3 years. A microcontroller inside the panel box checks and signals a battery-low condition and also self-tests most of the electronics in the insulator and the control panel.

Voltage detection is not based on a level threshold that is transmitted through the cable interconnecting insulator and panel box, but rather on a low frequency oscillation generated in the insulator circuitry. This gives the system extra noise immunity.

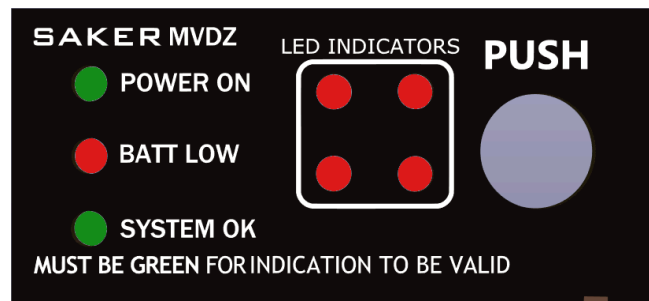
USAGE

The MVDZ is powered by an internal 9V battery inside the panel box. Operation starts when the frontal push-button is operated. The barrel connector from the panel box must be connected to the bushing insulator for proper operation. Description of the front panel follows:

POWER ON: Green LED that turns on when the system is operating.

BATT LOW: Red LED that signals that the internal 9V battery needs to be replaced.

SYSTEM OK: Green LED that must turn on for the voltage indication to be valid. Correct working of the circuitry inside the control box and most of the circuitry in the insulator is tested. The barrel connector must be connected to the bushing insulator for the test to work properly. *If the SYSTEM OK LED does not light the MVDZ detector needs servicing.*



Control box front panel

LED INDICATORS: 4 red LEDs that will blink if voltage presence is detected.

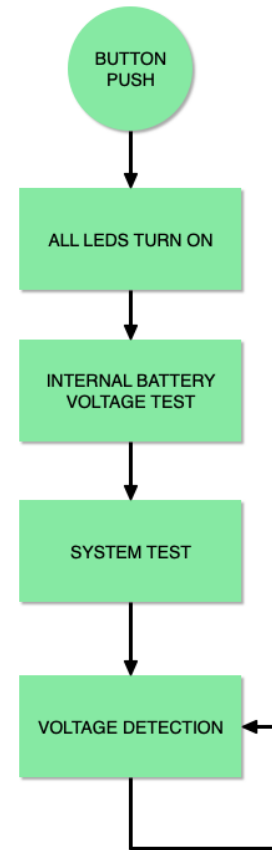
PUSHBUTTON: Must be pressed for operation of the detector

When the frontal push-button is pressed, all LEDs are lit for less than a second. Afterwards the microcontroller checks the battery voltage and runs some tests on both panel box and insulator circuitry. If these tests are successful the SYSTEM OK LED will light.

Finally the presence of voltage is continuously monitored and displayed by the 4 red indicator LEDs until the push-button is released.



Threaded jack connector



BATTERY REMOVAL

To remove the internal battery remove the control box from the cabinet by pushing it forward and unscrew the 2 Phillips screws from the upper cover. Replace the 9V battery and close the cover again.



INSPECTION

SAKER recommends that a regular working inspection of the module is included together with the equipment recommended periodical inspection.

SPECIFICATIONS

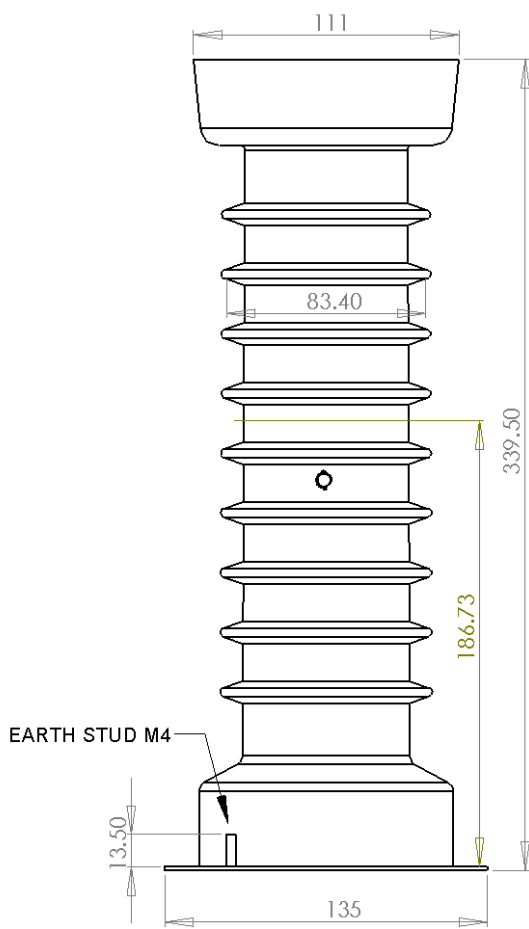
	MVDZ	Units
Connection type	Phase-neutral	
Rated voltage	36	kV
Input impedance	405	MΩ
Battery on panel box	9V PP3	
Activation Voltage	<50, 40 typical	VDC/Vrms
LED frequency	>2	Hz
Working temperature	-25..+70	°C
Input bolts diameter	6	mm
Creepage	>605	mm
Overvoltage factor	1.9x8h	
Test voltages	70/145	kV
Insulation thermal class	120°C(E), IEC 60085	
Routine tests	Activation voltage LED frequency Partial discharges Control electronics check	
Insulator weight	2.1	Kg
Normative references	IEC 60273, 61243-5, 61243-2	

ORDERING CODES

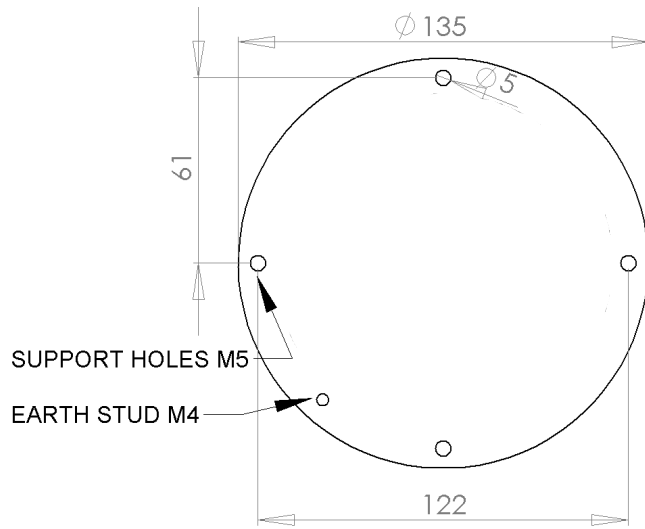
CODE	Description
MVDZ	MVDZ Voltage detector/indicator including bushing insulator, front panel box, cable length as per customer requirement

DIMENSIONS

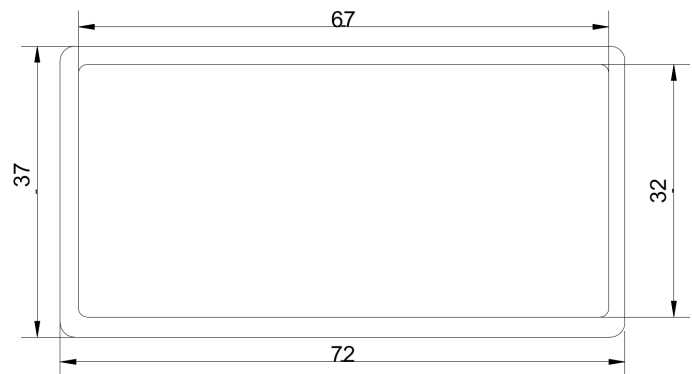
All dimensions in mm.



Insulator dimensions



Base plate dimensions



External panel and panel cut dimensions. Control box depth 78 mm