Cathtect Engineering (Pty) Ltd.

Cathodic Protection Decoupling Devices

WHAT IT TAKES

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Solid- State Decouplers

General Information:

The Cathtect Engineering (Pty) Ltd Solid-state Decoupling device is a solid state DC isolation / AC Grounding device designed for specific protection applications generally found in buried pipeline and storage tank systems. The equipment is suitable to be employed in AC Mitigation applications, Over Voltage protection of Insulating Joints, DC isolation and AC Grounding of Cathodically Protected structures.

The Solid-state Decoupling devices are fully serviceable and are in standard packaging forms IP 66, IP 68 and Exe. All components are fully accessible and are fully serviceable by suitably skilled artisans. Accessibility enables easily and speedily user programmable blocking/switching voltages.

The Solid-state Decoupler functions as a DC voltage level clamping device and can at the same time mitigate AC voltage. This feature allows up to 15A AC induced current to pass and prevents the flow of DC current whilst the DC voltage remains below the pre-determined design blocking threshold. When the DC voltage exceeds the aforementioned threshold the device instantaneously switches on and thereby limits the DC voltage of the device under protection. Immediately the voltage falls as the surge event passes and decays to below the threshold level, the SSD switches off and reverts to its blocking mode.

Why choose Cathtect?

Cathtect Engineering (Pty) Ltd are the Technical Market leaders in the Cathodic Protection Industry, we are innovative thinkers who constantly seek to improve the performance of our products and push them to the limit so that we can give you the very best in all that we do. Our products undergo all the relevant performance tests in our factory, to ensure their performance and adherence to specifications. We are Passionate about the Cathodic Protection Industry and Love what we do. This Love and Passion drives us and inspires us to do what it takes to exceed our clients expectations every step of the way!

Applications:

Our solid state De-Coupling devices are purpose designed to:

- De-couple dissimilar metals that must, by regulation or galvanic corrosion, be AC bonded but isolated in the DC mode.
- Isolate electrical DC equipment in Cathodic Protection systems.
- AC coupling to earth where DC blocking/isolation is required.
- Over voltage conditions emanating from Induced AC surges, lightning and switching transients and Rectifier failure.
- Protection of Insulating joints on pipelines.
- Mitigation of AC induced voltages.
- De-Coupling in gradient control (earth / grounding) mats from pipelines and structures.

Protection of Insulating joints require overvoltage protection due to the relatively small clearance be-tween the flange faces, bolt to bolt hole and bolt head / nut to flange face. In order to protect the insulating materials used in the insulating flange kit, overvoltage protection devices are applied to ensure the voltage does not exceed pre-determined levels.

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Cathtect’s Solid- State Decouplers

The need for Solid state decouplers arises from mitigating induced voltages on pipelines near overhead power lines. These decouplers are installed for safety reasons as well as maintaining required DC voltages for protecting the integrity of pipelines.

Cathtect’s range of Solid State Decouplers are known for their quality, service life, low cost and workmanship. Using advanced electrical and electronic technologies, our SSD products improve Cathodic Protection systems and ensure the safety of the workers operating in that environment.

Benefits of Cathtect’s Solid State Decouplers

Benefits of Cathtect’s Solid State Decouplers

- Higher blocking voltages over older technologies such as polarization cells
- More technically advanced than our competitors
- Can handle large steady state clamping currents for longer periods of time than Metal Oxide Varistor (MOV)
- Light weight compact designs

Cathtect's SSD-DCD

SSD-DCD is used for DC isolation between a pipe and a grounding system. The SSD-DCD clamps the potential to a certain threshold voltage by passing current through to the lower potential between the pipe and the grounding systems. The device then switches itself off if the voltage present reduces back to its desired range.

Features and Ratings of Cathtect's SSD-DCD

Some Features of Cathtect's SSD-DCD

- Wide DC clamping voltage range
- High steady state DC current drain of 800A or up to 60A for 15 mins
- 60Hz AC impedance of 0.04Ω (Extra)
- AC steady state current 45A @ 50/60Hz (Extra)
- Lightning impulse current rating Class 1: 100 kA for 10/350 µs
- AC fault current rating 3.7kA for 30 cycles
- Lightning DC spark over voltage - 600V
- IP68 Submersible design up to two meters in depth

** Please refer to the technical datasheet for all product specifications*

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Ratings of Cathtect's SSD-DCD

Cathtect's SSD-DCD product line consists of 2 sizes namely 1.2kA and 3.7kA - For each type there are different options of DC Thresholds to choose from but they are all @60Hz

Different DC Thresholds to choose from:

1.-11V to +1V
2.-3V to +1V
3.-2V to +2V

Cathtect's SSD-DCDth

This device, like the SSD-DCD maintains an off state in a desired range of voltage between a pipe and ground. When the range is exceeded it short circuits and brings the pipe down to ground potential, it does not switch off until the polarization of the exceeded potential threshold reverses.

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Features and Ratings of Cathtect's SSD-DCDth

Features of Cathtect's SSD-DCDth

- Wide DC clamping voltage range +2V/-2V/-5.6V/-9.2V/-12.8V/-16.4V/-20V
- High steady state DC current drain
- 60Hz AC impedance of 0.04Ω (Extra)
- AC steady state current 45A @ 50/60Hz (Extra)
- Lightning impulse current rating Class 1: 100 kA for 10/350 µs
- AC fault current rating 1.2kA/3.7kA for 30 cycles
- Lightning DC spark over voltage - 600V
- IP68 Submersible design up to two meters in depth

* Please refer to the technical datasheet for all product specifications

Ratings of SSD-DCDth

Cathtect's SSD-DCDth product line consists of 3 sizes namely 1.2kA, 3.7kA and 9.5kA - For each type there are 6 different options of DC Thresholds to choose from but they are all @60Hz

Different DC Thresholds to choose from:

1.-2V to +2V
2.-5.6V to +2V
3.9.2V to +2V
4.12.8V to +2V
5.16.4V to +2V
6.-20V to +2V

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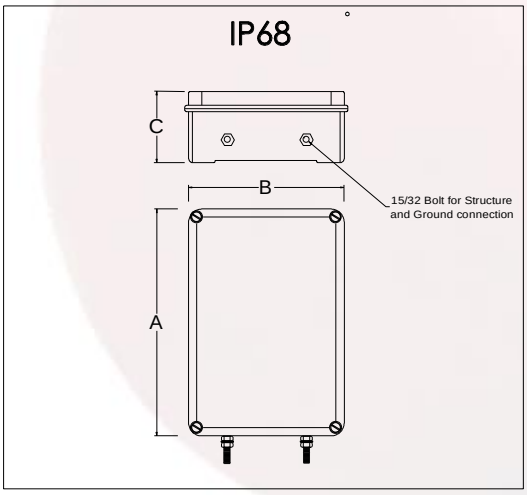
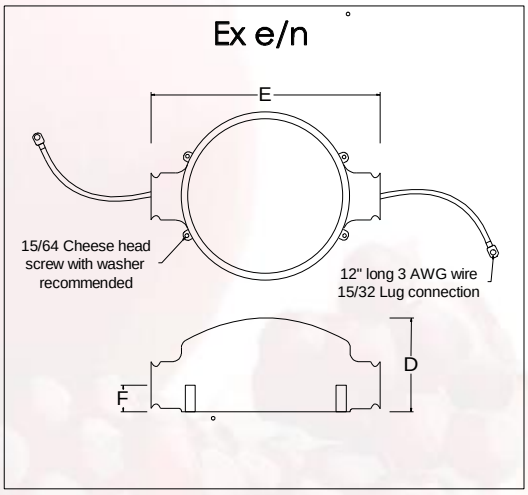
SSD Enclosure Detail

Solid-state Decouplers come in a standard rectangular grey Polycarbonate IP 66 and IP 68 wall mount enclosures with mounting brackets included. For hazardous areas a standard Exe black explosive proof, round wall mount enclosure is used.

Enclosure dimensions





SSD Type	Standard IP 66			Standard IP 68			Ex e/n		
	A	B	C	A	B	C	D	E	F
SSD-DCD 3.7kA	280	190	130	260	165	160	145.2	323.6	39.2
SSD-DCD 1.2kA	280	190	130	260	165	160	145.2	323.6	39.2
SSD-DCDth 9.5 kA	280	190	130	186	151	132	145.2	323.6	39.2
SSD-DCDth 3.7kA	280	190	130	186	151	132	145.2	323.6	39.2
SSD-DCDth 1.2kA	280	190	130	186	151	132	132.9	271	33.8

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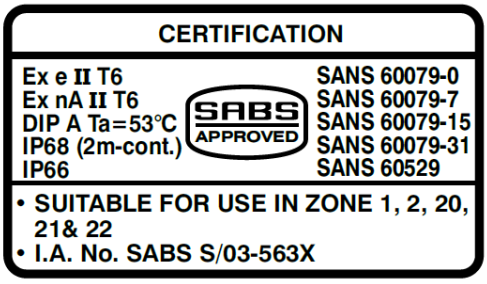
Certifications

Ex e/n Certification



SABS Tested

Complies with:

Guideline on the Electrical Co-ordination of Power Lines & Pipelines GL 240-66418968

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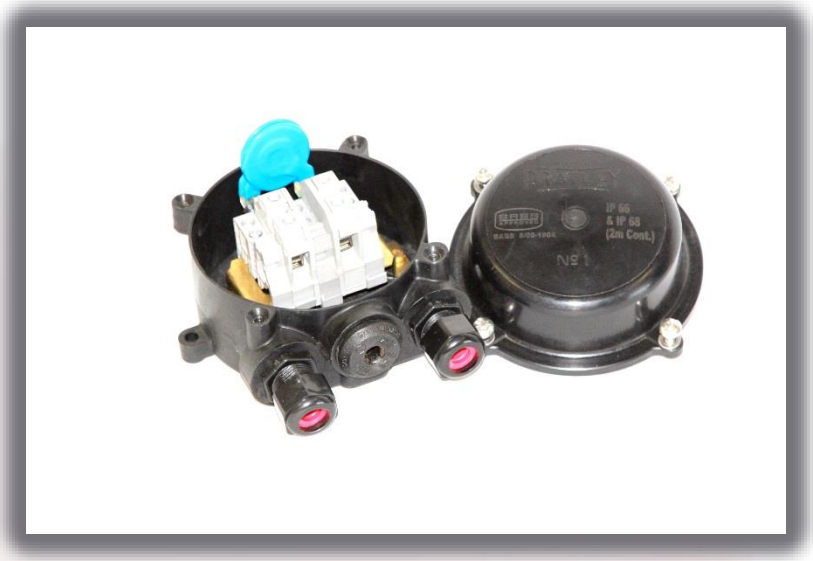
Voltage Limiting Device (VLD)

Dc transient protection and voltage limiting devices for test points, ground mats, earth spikes and rebar connections.



Features of Cathtect's Voltage Limiting Device (VLD)

- DC Voltage Blocking @ 75V
- Lightening impulse clamping voltage @360V
- Very fast clamping response time @25ns
- Lightening current rating Class ll @50 kA for (8/20 µs)+
- Device failure open circuit
- Submersible enclosure up to 2 metres in depth – IP68

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