Cables for 20KV Feedthroughs type 250-SHV and 250-SHVE (valid for all flange versions)

As standard, these feedthroughs are supplied with an air side connector, fitting to cables type RG-8/ RG-8A, RG-11/ RG-11A and RG213/U

The RG213/U is the mainly used cable, it has an impedance of 50 Ohm

Specification of feedthrough and connector is 20KV DC, max. 15A

Cable Type	OD	Conductor	Dielectric	Impedance	Capacitance	Freq.	Test Voltage
RG-8A	10.3mm	7x 0.73mm 2.16mm	PE	50 Ohm	101 pF/m	< 1GHz	
RG-11A/U	10.3mm	7x 0.4mm	PE	75 Ohm	67 pF/m	< 1GHz	10KV eff.
RG-213U	10.3mm	7x 0.8mm	PE	50 Ohm	101 pF/m	< 3GHz	10KV eff.

Question: Why produces a connector manufacturer a 20KV connector for a cable, rated to 10KV eff.?

Answer: The cable specification is far away from the real value.

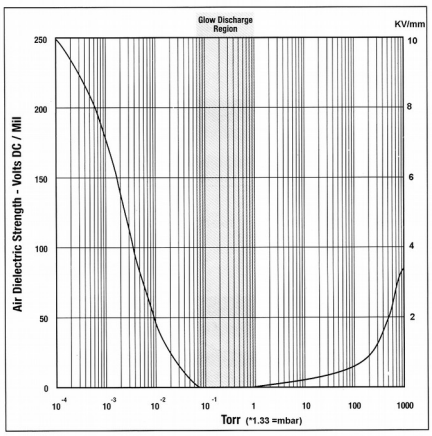
All the cables use PE as dielectric. The thickness of the dielectric is 2.5mm. As disruptive discharge voltage for PE, we found a typical value of 45KV/mm, some sources give only 40KV/mm, others up to 110KV/mm.
→ Even with the lowest value of 40KV/mm, the cable would have a disruptive discharge voltage of 100KV!

→ Allectra did tests on RG-213U cables, the max. voltage we can test is 41KV DC. The test showed no problem at all, even at 41KV.
Starting at ~30KV a leak current of 10μA/m was detectable.

As a service, Allectra offers SHV20 connectors with mounted RG-213U cable in the desired length (with open end).

These cables can be tested for 20KV DC with a test protocol.

Please be aware, that the vacuum must be better than 10^{-3} mbar, to achieve the specified voltage rating of feedthroughs.
The dielectric strength drops close to zero in the pressure range from about 10 mbar to 0.05 mbar



All data given in this sheet are carefully checked but subject to change at any time.

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