

Superscreened cables

for nucleonic systems

Key features

- Transmission of small signals over long distances in electromagnetically noisy environments
- Available in a range of characteristic impedances and excellent antimicrophonic variants
- High radiation and temperature tolerance
- Compliant with low smoke and fume regulations
- Specialist assembly and fitting service available

Overview

A key requirement of high performance instrumentation systems is the provision of adequate interference immunity. Standard co-axial signal cables and connectors are inadequate in dealing with these problems. From Ultra Energy's extensive experience in military and civil nuclear energy, a range of matching cables and connectors have been developed.

Widely in use throughout the UK's nuclear industry, these superscreened cables are available in a range of sizes, dielectrics and characteristic impedances. A technique called 'superscreening' is used to improve the screening performance at critical frequencies of 1000 to 10000 times that of standard co-axial cables and dramatically improves the surface transfer impedance. This is achieved by optimizing the braid screen construction and applying an intermediate annealed highly permeable alloy tape.

Technical data

Coaxial cable types																	
Type	Dielectric			Screen	Sheath		ZO	Cap	Screening			Attn	Vel Ratio	Max Amb Op Temp	Rad dose	Bend diam	Typical nucleonic applications
	Core matl	Coat matl	Diam mm	Nos braid/tapes	Matl (note 2)	Diam mm	Ω	pF/m	RO dc $\mu\Omega/m$	Zt at 30 kHz $\mu\Omega/m$	Zt at 30MHz $\mu\Omega/m$	At 1 MHz dB/100 m		$^{\circ}\text{C}$	MGy (note 1)	mm	
MM10/75	Pe	Gpe	2.95	2/1	HFS100	6.0	75	75	7000	230	100	2.2	0.63	90	1	50 (fixed) 150mm (general use)	ION Chamber (mean dc)
MM11/50	Pe	None	2.95	2/1	HFS100	6.0	50	100	7000	230	100	1.5	0.66	80	1	25 (fixed) 150mm (general use)	ION chamber EHT
MM15/50	Pe	None	2.95	3/2	LSF	7.0	50	100	4000	3	1	1.5	0.66	80	1	70 (fixed) 150mm (general use)	Pulse head amp. to main amp.
MM15/50 HFI	HFI 150	None	2.95	3/2	HFI 150	7.0	50	111	4000	3	1	1.5	0.68	80	1	70 (fixed) 150mm (general use)	Pulse head amp. to main amp.
MM17/33	Pe	Gpe	2.95	3/2	HFS100	7.0	33	170	4000	3	1	2.0	0.63	90	1	70 (fixed) 150mm (general use)	Pulse Campbell detector to head amp
MM20/75	Pe	Gpe	2.95	3/2	HFS100	7.0	75	75	4000	3	1	2.0	0.63	90	1	70 (fixed) 150mm (general use)	Pulse counter
MM61/33	Peek	None	1.5	2/1	PEEK	3.4	33	220	17000	1800	300	3.5	0.55	150	50	75 (fixed) 200mm (general use)	Detector high radiation
MM63/33	Peek	G	1.5	2/1	PEEK	3.4	33	-	17000	1800	300	3.5	0.55	150	50	75 (fixed) 200mm (general use)	Detector high radiation
MM65/33	Peek	G	1.5	3/2	PEEK	4.5	33	-	8000	180	1	3.5	0.55	150	50	100 (fixed) 400mm (general use)	Pulse channel

Notes:

1. Max integrated radiation dose at a dose rate of 2×10^{-5} Gy/hr
2. Materials: Pe – polythene, Gpe – graphite loaded polythene, LSF – low smoke and fume material, G – graphite

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