



HTS CURRENT LEADS

- With over 15 years in this field, the CryoSaver™ HTS current leads have demonstrated consistent outstanding performance.
- The CryoSaver™ family uses High Temperature Superconducting (HTS) tape to create a robust, reliable lead.
- CryoSaver™ current leads, rated from 150A to more than 2000A, deliver significantly improved performance, with lower heat leak than vapor-cooled leads.
- Applications include MRI, NMR, and beam-line magnets as well as driven (non-persistent) superconducting magnets.



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CryoSaver™ Leads

Standard CryoSaver™ leads use a fibreglass composite body to encase the HTS wire for structural integrity. This allows the lead to tolerate a large number of thermal and electrical cycles. Copper end-caps are used for warm and cold end connections.

Ballasted Leads

These incorporate a current shunt in the lead body to protect inductive loads in case of lead quench. Ballasted leads have superior mechanical properties compared with conventional leads, and can tolerate minor misalignment of contact surfaces. Length, terminal design and current capacity can be customized at time of order.

Sapphire Heat Sink Kits

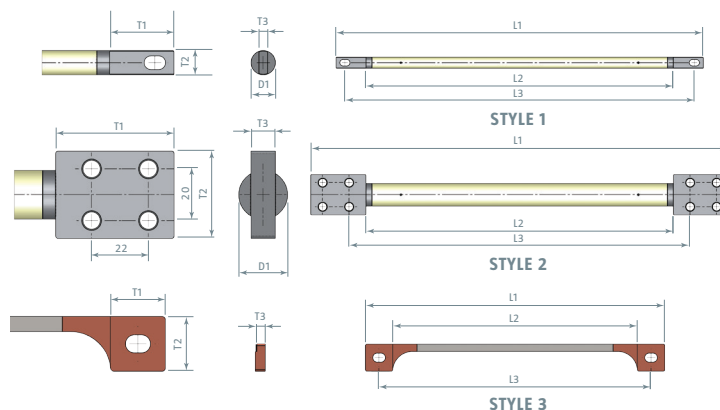
HTS-110 has developed Sapphire Heat Sink Kits for use on all standard leads to optimise the thermal contact between lead and heat sink. We recommend the use of these with all standard current leads.

Customisation

Customised CryoSaver™ current leads can be provided with custom terminals, complex geometry, or alternative dimensions to meet your requirements.

Hermetic Leads

Designed for service in cryogenic liquid or vapour, CryoSaver™ hermetic leads incorporate a ceramic break and/or flange to allow passage of the current lead through an intermediate temperature heat shield or vacuum cryostat wall.



Operating Current (at 64K)	Terminal					Calculated heat leak 64K-4.2K (pair) +/- 15%
	Style	Length (mm)	Width (mm)	Thickness (mm)	Hole Size (mm)	
150 A	1	25	8.9	3.3	R2.6x3	35mW
	1	16	7.1	6.4	R1.6x2	65mW
	3	16	16	6	R2.6x2	65mW
250 A	1	25	9.4	6.4	R2.6x3	65mW
	1	16	11	6.4	R2.2x2	130mW
	3	16	16	6	R2.6x2	125mW
500 A	1	25	12.8	6.4	R2.6x3	135mW
	3	16	21	6	R2.6x2	235mW
1000 A	2	46	34	9.5	R3.3	285mW
2000 A	2	46	34	12.7	R3.3	560mW

Benefits

- » **Low Heat Leak:** The composite conductor consists of HTS filaments in a low thermal conductivity matrix, providing a very high current density and low heat leak through the small cross-section.
- » **Field Tolerant:** The anisotropic nature of the CryoSaver™ current leads allows the lead to be positioned in a cryostat such that applied fields are along a favorable axis, an advantage over isotropic bulk materials.
- » **Ease of Integration:** Electrical connection to the copper end caps is easily made, mechanically or by soldering, for low resistance and low Joule heating.
- » **Durable & Stable:** The HTS conductor exhibits tolerance to strain & thermal cycling superior to other types of HTS leads. CryoSaver™ leads have superior ability to tolerate and recover from minor cooling system upsets without damage or burn-out, as the metal matrix in the conductor slows temperature rise after loss of cooling.

Operating Current (at 64K)	Type	Body dia. (mm)	Overall length (mm)	Gap length (mm)	Fixing Centre Distance (mm)	Calculated mechanical limits		
						Comp. (N)	Tension (N)	Torsion (Nm)
			L1	L2	L3			
150 A	Standard	9.5	305	255	290	200	1500	7
	Short	9.5	170	138	158	-	-	-
	Ballasted	4.5x1.2	174	142	158	-	-	-
250 A	Standard	11.1	305	255	290	400	2000	11
	Short	12.7	170	138	158	-	-	-
	Ballasted	4.5x2.0	174	142	158	-	-	-
500 A	Standard	14.3	305	255	290	1100	2500	18
	Ballasted	9.0x1.5	174	142	158	-	-	-
1000 A	Standard	19.1	347	255	283	3400	4000	38
2000 A	Standard	25.4	347	255	283	8400	5000	60

Note: electrical performance may be degraded at the estimated mechanical limits.