

# SUPERCURRENT™ HTS SYSTEM CRITICAL CURRENT MEASUREMENT



STATUS: **READY TO ORDER**

DELIVERY: **9 MONTHS**



Automate critical current ( $I_c$ ) measurement of HTS wires and tapes with the cryogen-free SuperCurrent™. It integrates a high-field split-pair magnet and a comprehensive measurement setup for characterising superconducting wires under varying conditions of temperature, magnetic field, and field angle relative to the sample.

- **Comprehensive Characterisation:** Measures critical parameters including  $I_c$  and n-value.
- **Flexible Operating Environment:** Conducts measurements across variable temperatures (15 K - 90 K), magnetic fields (currently up to 12 T), and precise field angles (0 - 360°).
- **Cryogen-Free Operation:** Eliminates the need for liquid helium or nitrogen, ensuring safe, user-friendly, and cost-efficient operation.
- **Proven Automation:** Refined with over a decade of real world use, to provide proven reliable high-throughput measurement capability. It has set the benchmark for HTS tape characterisation.

**Designed from the ground up for superconductor characterisation:**

- HTS Wire & Tape Development
- Novel Superconducting Material Research
- Manufacturing Quality Assurance

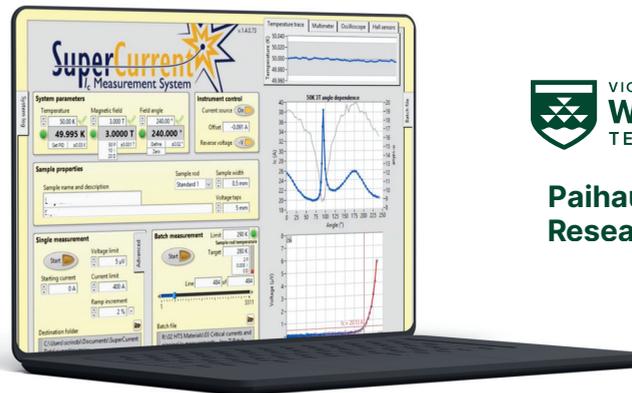
The SuperCurrent™ System is proudly provided in partnership with **Paihou - Robinson Research Institute**, the world leading authority on HTS tape measurement and provider of the open-access High-Temperature Superconducting Wire Critical Current Database. <https://htsdb.wimbush.eu>

**12 X 60 MM**  
SAMPLE SIZE

**5 / 8 / 12 TESLA**  
AND HIGHER FIELD OPTIONS

**10-20 SECONDS**  
PER MEASUREMENT POINT

**CRYOGEN-FREE**  
NO LIQUID HELIUM

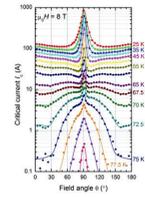


**Paihou - Robinson  
Research Institute**



HTS-110's global client base includes tier-one data storage companies; manufacturers; universities; and national research institutes including ALBA, ANL, ANSTO, BNL, CAS, FZJ, HZB, ILL, IMRE, JAXA, LNLS, MSL (NZ), NIST, NUS (SSLS), PAL, RAL, RTRI, TATA, TPS, and TUM (FRMII).

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## A FULLY INTEGRATED, TURN-KEY SOLUTION FOR AUTOMATED HTS WIRE CHARACTERISATION

### SPECIFICATIONS

<b>Sample Environment</b>	Sample space	Ø 20 - 30 mm (system dependent)
	Sample size	12 mm x 60 mm x 3mm as standard
	Sample rotation	0 - 360°
	Sample cold-swap cool-down time	20 mins to 20 K
	Angle reproducibility	± 0.5°
	Sample temperature	15 K – 90 K
	Temperature stability	± 0.02 K
	Transport current	1200 A standard probe
<b>Measurement and Control Software</b>	$I_c$ accuracy	1 % at 1 $\mu\text{V cm}^{-1}$ criterion
	$I_c$ measurement time	~20 s per data point
	$I_c$ measurement mode	Exponential or linear current ramp
	Batch measurements	Automated control software
<b>HTS Magnet</b>	Magnetic field	-12 T to +12 T
	Magnetic field stability	±0.2% or ±1 mT with active feedback
	Cool down	< 60 hours from room to operating $T_c$



### TURNKEY SYSTEM

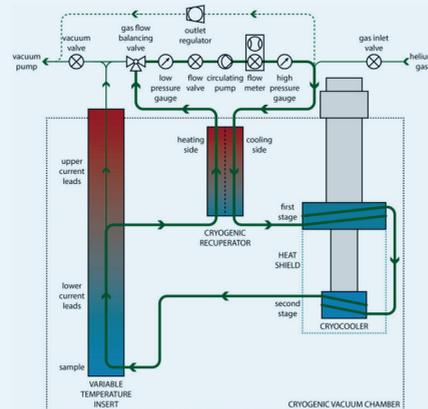
- **Magnet Sub-System.** Fully integrated cryogen-free HTS split-pair magnet, passive shielding
- **Power Supply.** High-stability power supplies for the magnet and sample transport current
- **Control Electronics.** All necessary control electronics and low-noise preamplifiers. Integrated active magnet protection with an energy dump circuit
- **Sample Environment.** LabVIEW-based software for automated control and data acquisition. Variable-temperature sample stage with 360° rotation. 1200 A transport current sample probe
- **Warranty and Support.** 1-year standard warranty on all magnet sub-systems. Manufacturer warranty on components

### OPTIONS AND ADD-ONS

- Systems of 5 T, 8 T, and 12 T are available. Higher field configurations can be discussed
- Calibrated Hall sensor for precise, real-time field monitoring within the software
- Dedicated closed-loop water chiller
- Dry vacuum pump package

### SITE AND OPERATING ENVIRONMENT

- 50/60Hz 3P power for magnet and sample environment
- Helium gas supply required for sample exchange
- Vacuum pump for installation and maintenance; turbomolecular pump recommended (min. pumping speed 40 l/s and ultimate pressure < 10<sup>-7</sup> mbar)



#### Complementary Technical Consultation

- Explore suitability of HTS for your application including a concept magnet system.
- Provide a detailed quote, or if required, a cost for a detailed feasibility study.

#### HTS Technology Validation

- Prepare lifetime operating cost report and maintenance schedules.
- Scope facility integration, operation manuals, and user training.

#### Production, Testing and Delivery

- We build, test, and QC the system to rigorous standards.
- On-site installation and operational training, plus lifetime support.

EST. MANUFACTURING TIMELINE

**9 MONTHS**

VARIOUS OPTIONS AVAILABLE

**SCHEDULE A MEETING**