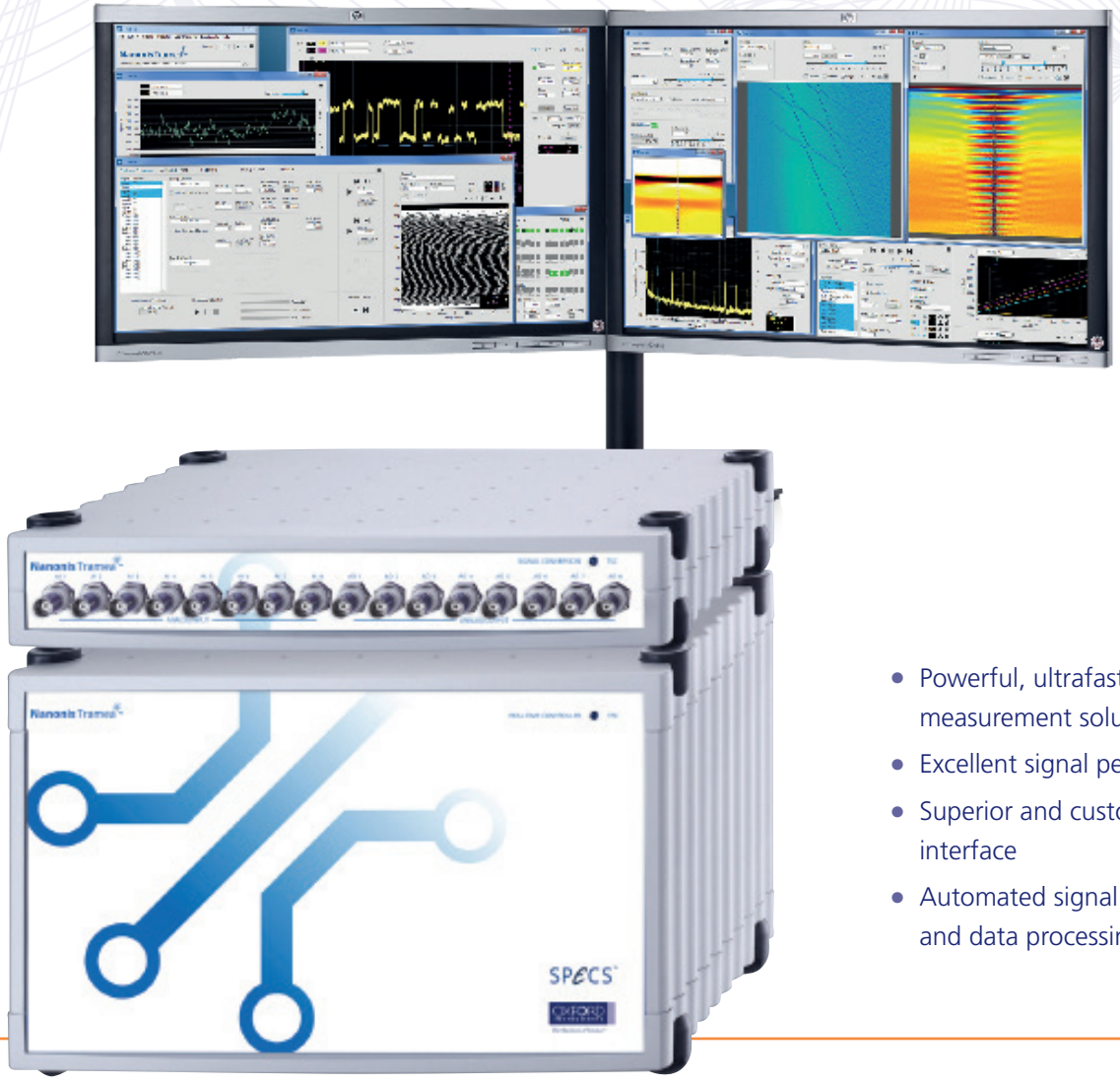
OXFORD INSTRUMENTS

The Business of Science®

Quantum Transport Measurement System (**QTMS**)

A perfect pairing – Oxford Instruments' low and ultra low temperature systems and **Nanonis Tramea**™



- Powerful, ultrafast measurement solution
- Excellent signal performance
- Superior and customisable user interface
- Automated signal acquisition and data processing

Why choose **Nanonis Tramea**?

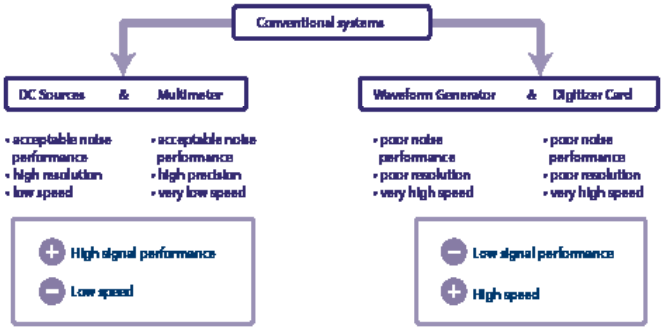
Nanonis Tramea delivers precise, fast and high-quality measurements offering a superior handling of different measurement methods compared to commonly used laboratory equipment.

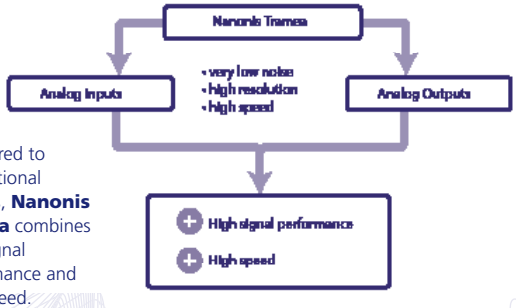
The software-based instrument facilitates best-in-class research by delivering simple signal handling features through an easy to use and customisable user interface. This is combined with high performance hardware that has a small and compact footprint.

When **Nanonis Tramea** is combined with Oxford Instruments low temperature and ultra-low temperature systems, it provides the ultimate efficiency for quantum transport research.

- Full control of **Mercury**iTC temperature controller and **Mercury**iPS magnet power supply is unique to Oxford Instruments! Control your magnet, temperature and experimental routines all in one place
- Professional software package with full commercial support and regular updates!
- **Tramea** is scalable up to 48 outputs – additional inputs/outputs can be integrated into the system in an economical manner
- **Tramea** is easily customisable with the **LabVIEW** programming module and the scripting add-on module, so all the experiments and instrumentation can be controlled in this one device.

No need to choose between high signal performance (at the cost of measurement speed) or fast data acquisition (suffering from lower resolution and higher noise) as the instrument guarantees both at the same time. The combination of precision, accuracy, low noise and low drift, with a large number of signals and a high measurement speed is unique to **Nanonis Tramea**.



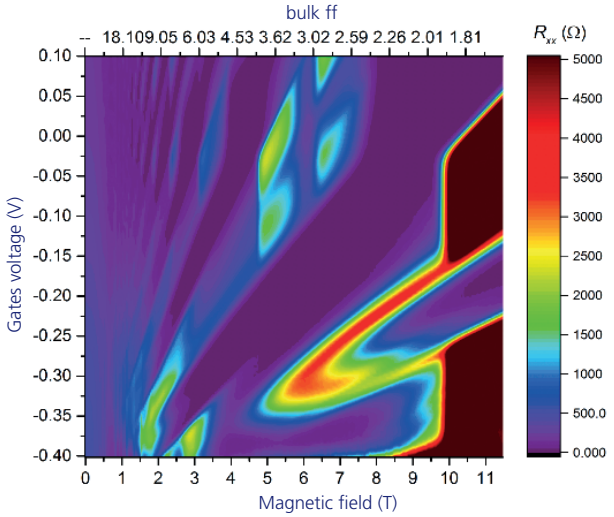


Compared to conventional systems, **Nanonis Tramea** combines high signal performance and high speed.

Base configuration
8 analog inputs
8 analog outputs
FPGA + real-time signal processing
Oscilloscopes
Spectrum analyser
Powerful software measurement suite
High resolution data acquisition
1D, 3D and N dimensional sweepers
Direct control of up to 4 external devices
Direct control of **Mercury**iPS and **Mercury**iTC
Language independent programming interface

Software upgrades
Up to 8 lock-in amplifiers
High speed 1 MHz oscilloscope and spectrum analyser
LabVIEW interface
Scripting module
Function generator
PI controller

Hardware Upgrades
Tramea Signal Conversion –TSC (extra 8 inputs and 8 outputs)
Tramea Signal Output – TSO (extra 16 outputs)



Longitudinal resistance as a function of applied magnetic field and gate voltage. The electron density is locally tuned so that a certain electrically compressible/ incompressible landscape within the two-dimensional electron system is preserved over wide ranges of magnetic field. The quantum hall effect (QHE) of graphene was measured using the lock-in amplifier module of Nanonis Tramea and an Oxford Instruments 1 K VTI with a 13 T magnet. Courtesy of Rostyslav Savytskyy, Andreas Gauß and Jürgen Weis, Max Planck Institute for Solid State Research.

Tramea is perfectly suited for a large number of applications such as: Quantum Hall Effect, topological insulators, Majorana fermions, graphene nanodevices, carbon nanotubes, quantum dots, quantum point contacts, spin-qubits in quantum dots, quantum rings and other nanodevices.

Visit **www.oxinst.com/qtms** or email **nanoscience@oxinst.com**

Main service locations: UK, USA, Germany, China, Japan and India

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