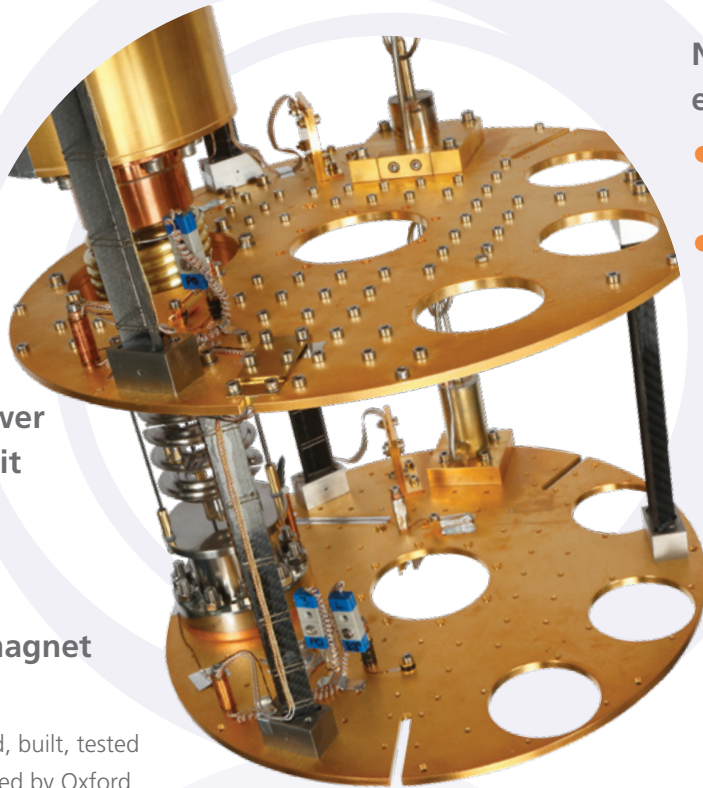


### Introducing the new generation 2016 Triton Cryofree<sup>®</sup> dilution refrigerator

With even **more experimental space** and **enhanced cooling power**,  
plus **easier to use** than ever before

The **Triton** family of cryogen-free dilution refrigerators has led the way in ultra low temperature experiment-readiness with its leading-edge superconducting magnet integration, sample loading mechanisms, and sample wiring options.

With over 200 systems installed worldwide, **Triton** is used in world-leading science across quantum technology, spintronics, optics, and many other cutting-edge applications of condensed matter physics.



#### NEW cooling power where you need it

- 500  $\mu$ W at 100 mK
- 15  $\mu$ W at 20 mK

#### Complete magnet integration

- Fully designed, built, tested and guaranteed by Oxford Instruments
- Easily demountable current lead connections

#### Fast sample change and maximum sample size

- Unique bottom-loading sample puck design for best-in-class wiring capability and sample change

#### NEW large experimental space

- Four line-of-sight ports for wiring and services into large experimental volume
- Large space between cold plates giving greater capability for wiring, filtering, attenuators and other signal chain components, plus easier access into these spaces

#### NEW design features for easiest operation and highest reliability, with:

- Single person operation
- Software control
- Easy access to cold stage



*The Business of Science<sup>®</sup>*

The **new generation 2016 Triton** – all the proven benefits of **Triton** leading capability for your experiments, and even more

## High cooling powers – for today’s experiments and tomorrow’s

Experiments now frequently extend well beyond the sample or device itself, to the signal conditioning and input/output methods - whether for qubit read-write, quantum sensor measurement, solid state pump-probe experiments, or any of the many other techniques used at ultra low temperatures.

Our latest 7th series **high cooling power DU7 dilution units** give the new generation **Triton** the highest cooling powers for your experiments.

	With DU7-500 dilution unit	With DU7-300 dilution unit
<b>Base T:</b>	<b>8 mK typical</b> , < 10 mK guaranteed	<b>8 mK typical</b> , < 10 mK guaranteed
<b>At 100 mK:</b>	<b>500 <math>\mu</math>W typical</b> , 450 $\mu$ W guaranteed	<b>300 <math>\mu</math>W typical</b> , 250 $\mu$ W guaranteed
<b>At 20 mK:</b>	<b>15 <math>\mu</math>W typical</b> , 12 $\mu$ W guaranteed	<b>10 <math>\mu</math>W typical</b> , 8 $\mu$ W guaranteed



## Unique superconducting magnet integration

Oxford Instruments is the **only company able to offer in-house design, manufacturing and support** of both the dilution refrigerator and the superconducting magnet, giving you access to unique service and support capabilities of all aspects of the system.

- A wide range of **Cryofree** solenoid magnets from 0.3 T to 14 T (up to 18 T on **TritonXL**)
- **Multi-axis vector magnets** including our leading 6/1/1 T, 90 mm bore design
- Both split pairs and multi-axis vector magnets with optical access
- Active shielding options to reduce magnetic footprint, and cancellation coils to minimise eddy current heating in swept-field experiments
- Current leads **demountable** with fasteners make it easy to remove the magnet
- **Magnet Field Control software** makes field setting easy, even with vector magnets in three dimensions

## Experimental capability

A **new, larger 290 mm diameter mixing chamber plate** with 240 mm sample space below it.

**More space on all the experimental stages** together with the regular hole pattern means more options and easier mounting of wiring, filters, attenuators and other components.

## Sample wiring

**New extra wiring capability** gives even more signal access in and out of the sample or device.

- Four line-of-sight ports for direct access from the top plate to the sample plate, giving capacity for 32 typical RF coax lines (such as UT85) with SMA connectors
- Eight non line-of-sight ports for flexible wiring and magnet current leads
- 100's of DC lines available

## Sample puck loading

Our **best-in-class, patented, bottom-loading mechanism** comes with a choice of 42 mm or 72 mm sample space.

- Proven 10 mK sample temperatures with multiple semi-rigid coaxes
- Supports a wide range of sample wiring configurations: 14 RF connections (40 GHz SMP) plus 50 DC connections supplied as standard, and up to 28 RF plus 100 DC available on request
- Compatible with piezo nanopositioning stages
- Specialised low eddy-current designs
- Fast cool-down within 10 hours
- Sample protected from ESD (make-before-break) via sample grounding or biasing before puck docks with mixing chamber plate

Top-loading sample exchange is also available, allowing integration with optical table and other site-specific requirements.

## Low vibration

To ensure low vibration, the PTR coldhead is isolated at the system top plate and at intermediate and 4 K stages.

The new higher-rigidity support structure reduces the amplitude of low frequency modes, resulting in low vibration within the sample space.

## Optics

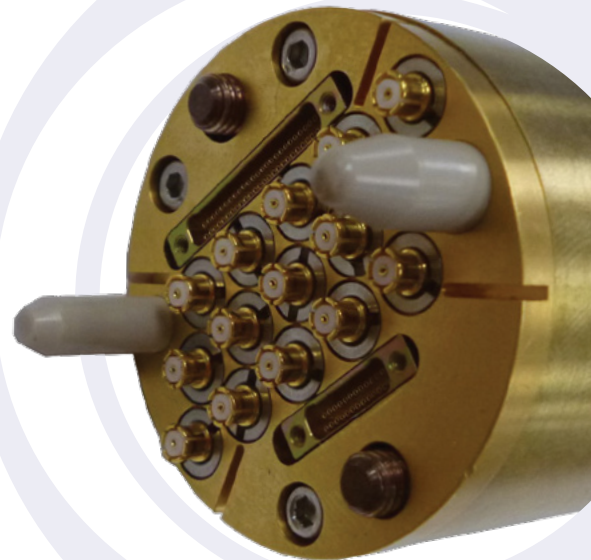
Demonstrated capability for **multiple optical window configurations**.

- Customised optical magnet solutions such as 2/2/2 T optical 3-axis vector rotate magnet
- Special optical access sample pucks

## Easy set-up and operation

The new support design maintains rigidity and low vibration between the cooling stage plates, and gives **easier access** and **new larger space** between the cooling stage plates for wiring, filtering, attenuators and other signal chain components.

**Self-supporting** radiation shields and vacuum can (OVC) for easy assembly by one person.



## Our support to you

Because Oxford Instruments is unique in designing and manufacturing more of the complete system than any other company, we are able to offer unrivalled support and expertise for your **Triton** system through our regional Customer Support teams backed by unmatched factory expertise.



All **Triton** systems come with **3 years comprehensive warranty** including all supplied third party components, such as the pulse-tube cooler, pumps and electronics – all backed by our expert regional service teams.

Visit [www.oxinst.com/Triton2016](http://www.oxinst.com/Triton2016) or email: [triton2016@oxinst.com](mailto:triton2016@oxinst.com)

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