

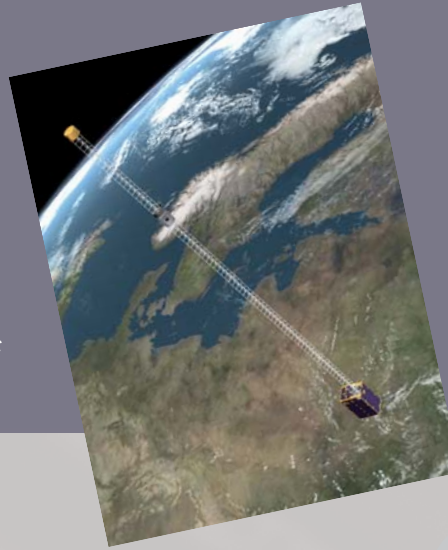
From space to ULTRASTAB current transducers

Back in 1820 the Danish scientist Hans Christian Oersted discovered that electric currents and magnetic fields have a common origin. He performed a simple demonstration showing the turning of a compass needle in the presence of an electric current. At that time he would not have imagined that this physical phenomenon was so fundamental and that it would continue to make a major impact on today's development of advanced technologies. The physical relationships discovered by Oersted were later quantified in Maxwell's equations.

What does it lead to?

As the image on the front page shows, man is now able to make precise measurements of the extremely weak magnetic fields surrounding our earth using the laws of Maxwell embedded in the design of the so called "flux gate magnetometer".

The current needed to establish an electromagnetic field that precisely counterbalances the local magnetic field is directly related to the magnetic field. So electric current can be a measure of magnetic field!



In Danfysik's precision current transducers – named ULTRASTABS – we are using the flux gate principle and performing state of the art wideband precision current measurement.

Zero flux detection

In the ULTRASTAB current transducers the magnetic field generated by the current flowing in a conductor is measured by counter balancing this field by means of the electromagnetic field generated by a toroidal coil. The precise counterbalance (the "zero flux") is detected by a very sensitive magnetic flux detector. This detector in turn drives the current source, feeding the necessary value of ampere-turns in the field compensating toroidal coil. The unique feature behind the compensation principle is its

extremely high accuracy. The limit is only set by the obtainable sensitivity in the magnetic field detector.

Here we reach the core capability of the ULTRASTAB current transducers. We have today a refined and proven zero flux technology which detects magnetic field with a resolution of about 0.0000003 of the absolute value! Or said in other terms we can measure a DC current to better than 3 parts in 10 million!

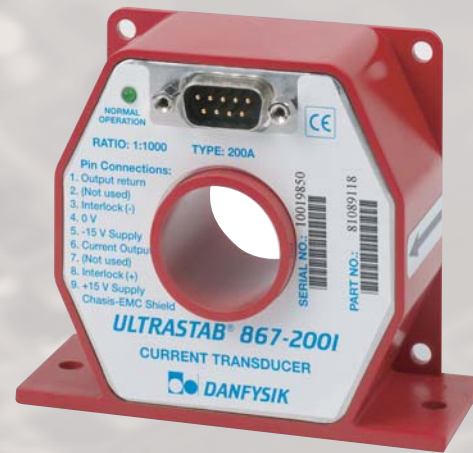
What else makes the Danfysik ULTRASTAB unique?

Top performance specifications:

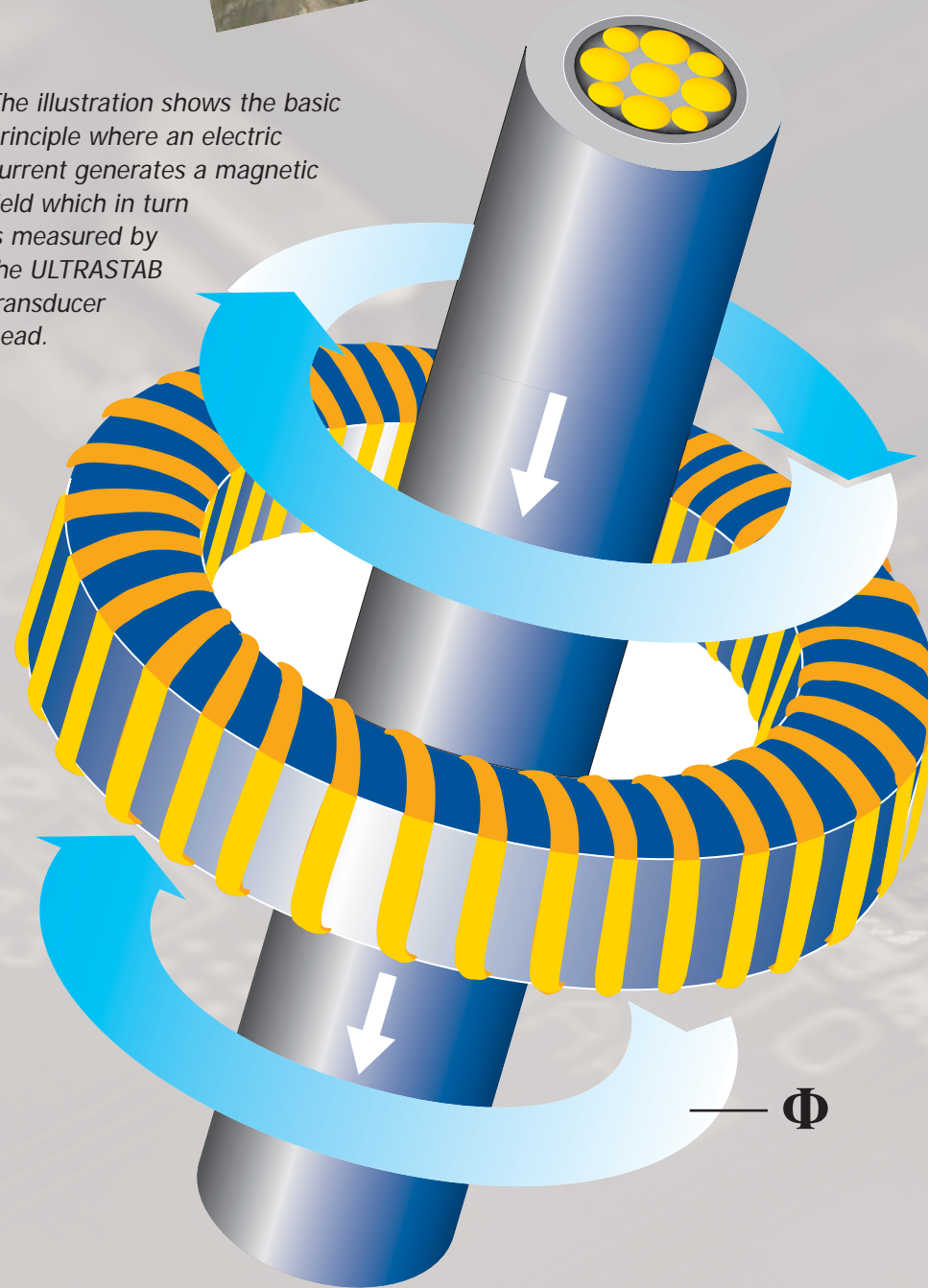
- Extremely high linearity in current measurement
- Very high absolute precision
- Very high reproducibility
- Extremely low temperature coefficient
- Very low intrinsic noise data
- Unsurpassed dynamic range
- Very wide bandwidth
- High common mode rejection

The ULTRASTAB 867-2001

With "on-board" electronics it is an ideal compact and versatile precision current transducer for use as the feed-back element in power supplies.



- The illustration shows the basic principle where an electric current generates a magnetic field which in turn is measured by the ULTRASTAB transducer head.



The versatile application of ULTRASTAB current transducers

For more than 20 years the ULTRASTAB program has been under constant expansion adapting to a wide range of applications:

- Current feedback in high performance power supplies
- Unsurpassed current stabilised power supplies for medical MRI
- Current feedback in Gradient Amplifiers for medical MRI
- Reference class for Test and Calibration laboratories
- DC & AC current measurement for Power Analysis
- Differential current measurement on DC power lines
- Motor & Drive testing
- Fuel Cells
- Replacement of high precision shunts



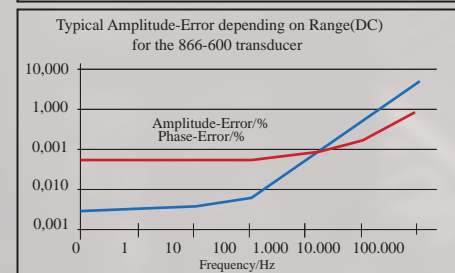
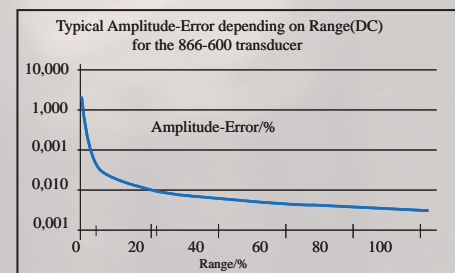
ULTRASTAB SATURN

New rack mount electronics for 600, 2000 and 5000A systems

For the highest levels of performance the ULTRASTAB product line is offered with new rack mount electronics – the ULTRASTAB SATURN. The ULTRASTAB SATURN is designed for driving programmable transducer heads rated for 600, 2000 or 5000A. This product line is delivered with certified analogue voltage output signal, calibrated to international standards. For higher current transducer systems we offer transducer heads rated for 10, 15, 20 and 25kA also combined with the rack mount electronics ULTRASTAB 862R.

Currents from DC to 500 kHz

The unique design of the ULTRASTAB current transducer ensures the optimum accuracy at DC currents, but the transducers also have class leading performance in amplitude and small phase shift for AC current measurement.



Transducer electronics on Eurocards

The Eurocard models ULTRASTAB TITAN and ULTRASTAB JANUS are standard modules designed for driving programmable transducer heads with 600, 2000 and 5000A head models.



Standard Products

	Current ranging									
	200A	400A	600A	700A	2kA	5kA	10kA	15kA	20kA	25kA
ULTRASTAB 867-200I	Red									
ULTRASTAB 867-400I		Red								
ULTRASTAB 866-600			Red							
ULTRASTAB 867-700I				Red						
ULTRASTAB 867-700U				Red						
ULTRASTAB 867-700PI				Red						
ULTRASTAB TITAN					Blue	Blue				
ULTRASTAB JANUS					Blue					
ULTRASTAB SATURN			Green		Green	Green				
ULTRASTAB 862R			Green		Green	Green	Green	Green	Green	Green
ULTRASTAB MSC-120	Blue									
ULTRASTAB MSC-140		Blue								
ULTRASTAB MSC-160			Blue							
ULTRASTAB MSC-170				Blue						
ULTRASTAB MSC-1200					Blue					
ULTRASTAB MSC-1500						Blue				

- Product with "On-board" electronics
- Product with "Rack mount" electronics
- Product with "Open frame" (Eurocard) electronics
- Product with "Multichannel" electronics

ULTRASTAB transducers in Danfysik power supplies

The precision current transducers in the ULTRASTAB program are key elements in all Danfysik power supplies. The System 8500 power supply series is a current stabilised product line that meets the highest current stability class obtainable on the world market. It is offered in a power range from 5kW to 1MW in customer defined current rating covering from 100A to 20kA. All models are current stabilised to stability classes ranging over 10, 1 and 0.1 ppm. (Please request special information concerning the System 8500).



Møllehaven 31 • DK-4040 Jyllinge • Denmark
Tel. +45 4679 0000 • Fax +45 4679 0001
sales@danfysik.dk • www.danfysik.com

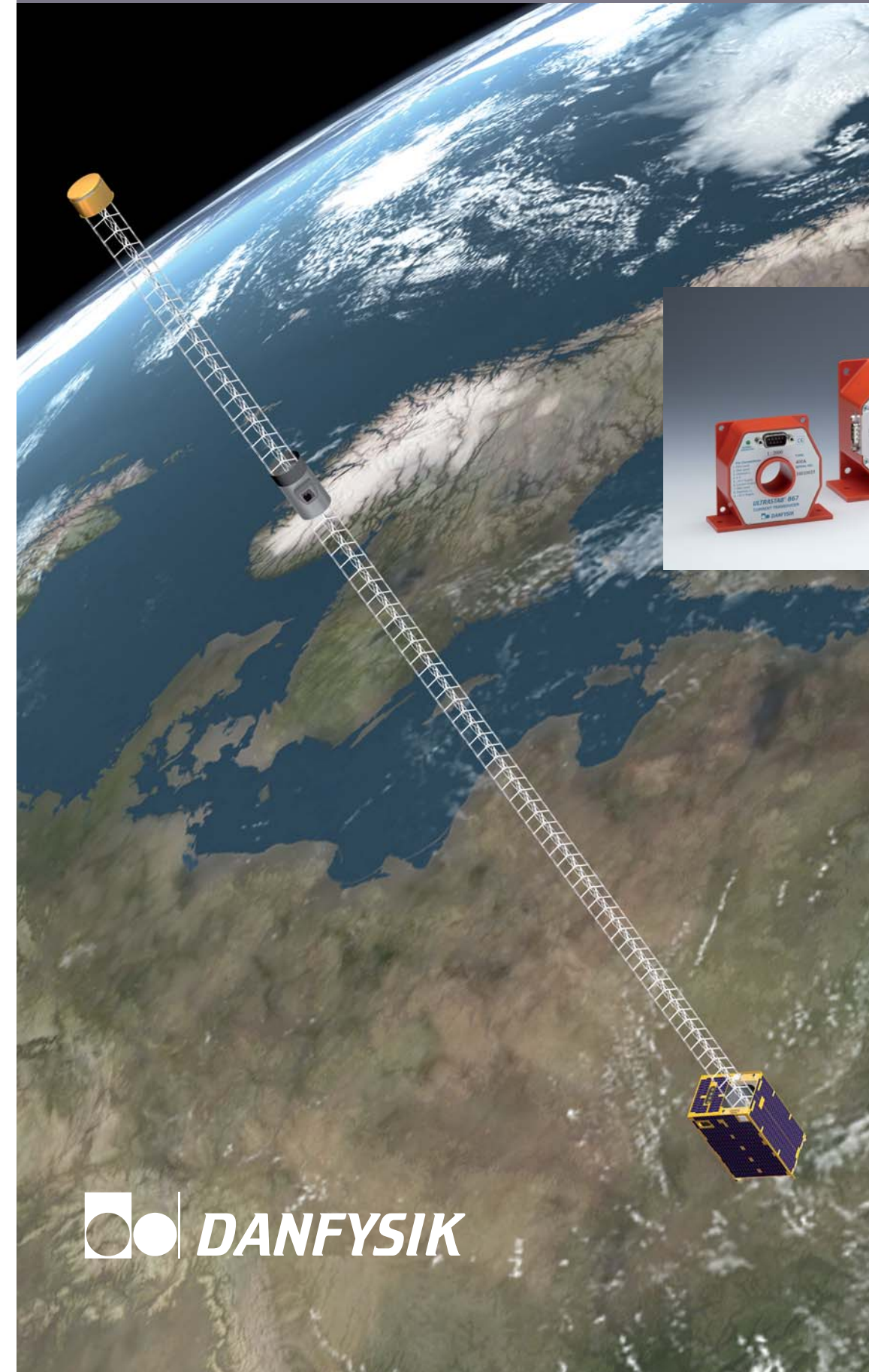


Unit 1 Ferry Mills, Osney Mead • Oxford OX2 OES • United Kingdom
Tel. +44 1865 320300 • Fax +44 1865 320301
sales@oxford-danfysik.com • www.oxford-danfysik.com

BROCH Saturn 0306-A

ULTRASTAB ULTRASTA

ULTRASTAB Current Transducer Technology



- From space to ULTRASTAB precision current transducers...
- New ULTRASTAB SATURN
- ULTRASTAB 867 series
- ULTRASTAB TITAN and JANUS Eurocard

