Orbit digital measurement system

orbit3

orbit3
DIGITAL NETWORK

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Arriving 2010

SI 7500 controller

USB interface

RS232 interface

Ethernet interface

Encoder input

Analogue input

Digital input / output

Digimatic input

DR 600, DR 700 readouts

SI 3500 controller

SI 1500 controller

PCI network card

Displacement transducers

Lever probe

Gauging probes

Mini probe

Flexure

Block gauges

Higher performance does not mean higher costs.

Quality standards in industry and research are becoming increasingly tight and demands for cost savings are also increasing. The upgrade from Orbit 2 to Orbit 3 provides the way forward for present and future precision measurement or positioning needs, whether on the production line or in the laboratory.

A system that incorporates more than one sensor technology will normally require different sets of signal conditioning electronics and software, with all the problems often associated with getting diverse technologies and software to work together.

In recognition to the fact that there is not a single sensor technology that is suitable for all gauging or positioning applications, Orbit 3 is not dedicated to a single sensor technology and is designed for use with an extensive range of third party sensors.

The upgrade to the Orbit 3 system carries forward all the well proven attributes of Orbit 2 plus essential additions to performance at no extra cost. (See page 7)

Orbit 3 is still based on a rugged and well proven RS485 multi-drop network running at 1.5m Baud. This enables the very high data speeds required for dynamic applications. Special attention has been given to all aspects of screening against electrical interference to provide good noise immunity (conforms to EN61000-6-2), which is essential to ensure reliable data processing.

All Solartron Metrology sensors and mechanical interfaces have been rigorously tested to ensure a long and productive life which coupled with the Orbit 3 data processing system leads to less down time, improved productivity and lower cost of ownership.
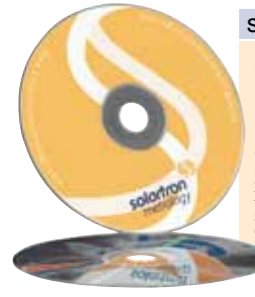
Software
Solartron Metrology provides support software for Microsoft Windows. This includes a COM object library and DLLs. These allow interfaces with modern development environments. Examples are also available in VBA.
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| Controllers	No. of devices	Description
SI 1500	1	Single channel panel mount display
SI 3500	2	Twin axis display / controller
DR 600 / DR 700	Up to 30	Digital readout
SI 7500	Up to 16	Multi channel controller
RS232 Interface Module	Up to 100	Single channel serial interface
USB Interface Module	Up to 31	Single channel serial interface
Ethernet Interface Module	TBC	Single channel serial interface
PCI network card	Up to 200 in standard mode	Dual channel PCI card (up to 100 devices per channel)

Refer to page 14 for details

Interface Modules	Description
Encoder Input	Interface to rotary and linear scale incremental encoders (TTL)
Digital I/O	Interface to discrete switches and to provide switch outputs. 8 I/O lines
Analogue Input	Interface to physical sensors with a DC output or 4-20mA
Digimatic Input	Interface to Digimatic capable gauges
Power Supply (not shown)	Provides power to Orbit modules

Refer to page 15 for details

A universal truth

Data is only of true value when it is processed from a reliable source
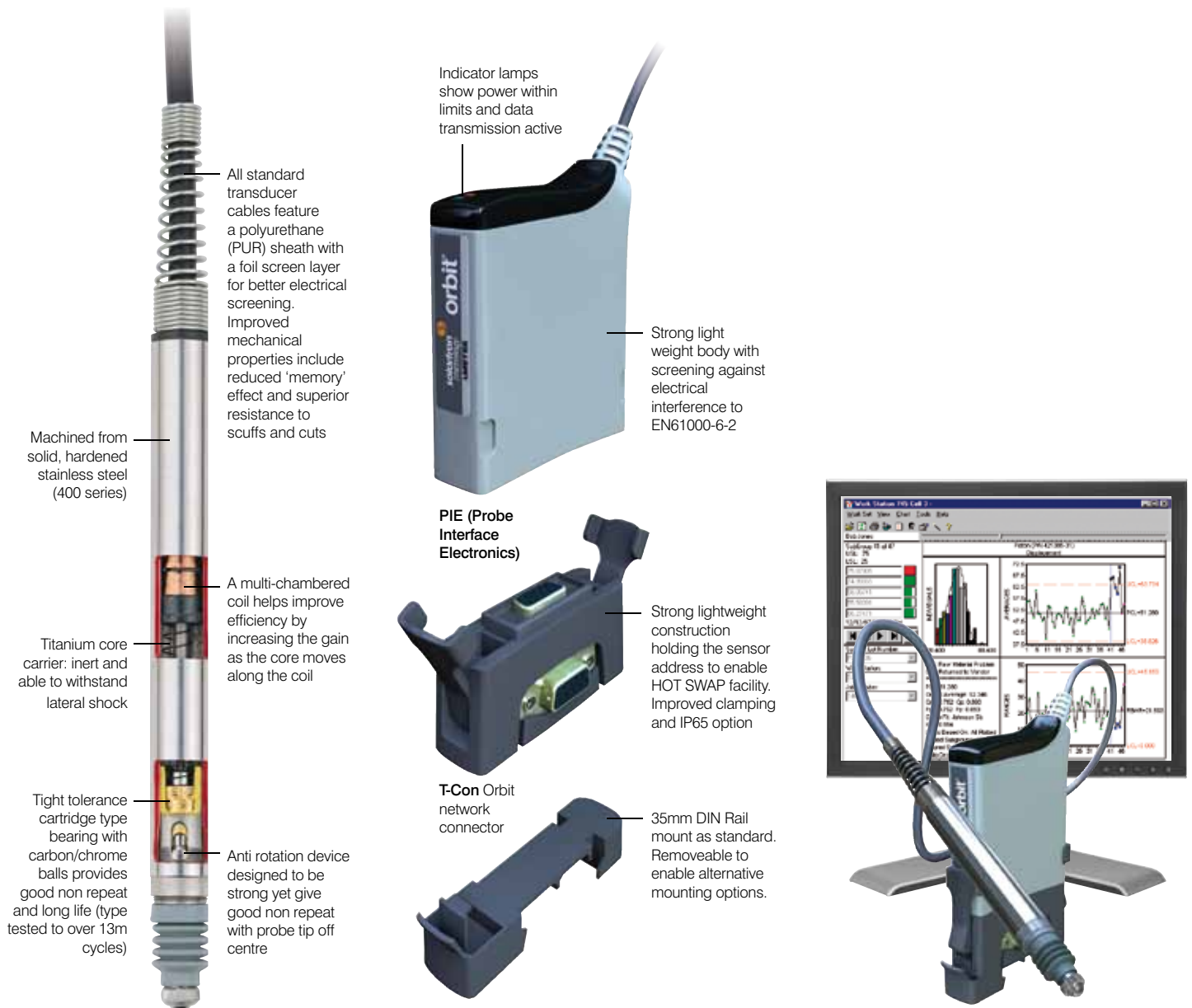
All standard transducer cables feature a polyurethane (PUR) sheath with a foil screen layer for better electrical screening. Improved mechanical properties include reduced 'memory' effect and superior resistance to scuffs and cuts

Machined from solid, hardened stainless steel (400 series)

A multi-chambered coil helps improve efficiency by increasing the gain as the core moves along the coil

Titanium core carrier: inert and able to withstand lateral shock

Tight tolerance cartridge type bearing with carbon/chrome balls provides good non repeat and long life (type tested to over 13m cycles)

Anti rotation device designed to be strong yet give good non repeat with probe tip off centre

Indicator lamps show power within limits and data transmission active

Strong light weight body with screening against electrical interference to EN61000-6-2

PIE (Probe Interface Electronics)

Strong lightweight construction holding the sensor address to enable HOT SWAP facility. Improved clamping and IP65 option

T-Con Orbit network connector

35mm DIN Rail mount as standard. Removeable to enable alternative mounting options.

Unerring data collection

A reliable sensor is essential to any data processing system. All Solartron Orbit based digital sensors and mechanical interfaces are designed to generate reliable data, not just from new but for millions of cycles.

Powerful processing

Good original data can be ruined by noisy signal conditioning and poor immunity to electrical interference, which in turn affects the repeatability of results. Orbit 3 processes and transmits clean, repeatable data from sensors at speeds of up to 4,000 readings per second.

Rock solid results

Data is only of use if it can be displayed and/or acted upon. Orbit 3 is available with a comprehensive range of Display/Controllers or software drivers and DLL's for PC based systems. Ethernet modules will be added to the existing PCI card, I/O and RS 232 modules during 2010 to increase communication options to both PC's and PLC's.

orbit 2 v orbit 3

It just gets better and better...

orbit3

Specification/feature	orbit 2	orbit 3
Accuracy	0.1% of reading	0.05% to 0.07% of reading (depending on probe type)
Hot Swap Capability	N/A	Smart T-Con enables fast exchange of probes
Modules into single PCI card[1]	62	200
Probe Fault Indication	Happy Light	Each PIE / Sensor (Red)
Low Supply Voltage Indication	N/A	Each PIE / Sensor (Red)
Data Transmission Indication	Happy Light	Each PIE / Sensor (Blue)
Weight	128g	88g max(Din Rail option)
Environmental Sealing (PIE / T-Con)	IP43	IP43 / IP65 Optional
Din Rail Mount option	N/A	New T-Con design with DIN Rail (35mm) attachment
Ethernet Interface Module	N/A	Ethernet Communication Module to be available 2010
RS232 Interface Module	31 modules	Improved to handle 100 modules
Encoder Input Module	Standard / Dynamic	As orbit2 + Dynamic Measurement Control
Clamping Arrangements	Single Lever Mechanism	Increased robustness of clamping assembly using double-lever assembly for high vibration applications
Power Supply Modules	Separate Block Arrangement	New smaller versions including PIE DC voltage version connected directly to stack
Compatibility with Instruments	Solartron SI 1500, SI 3500, SI 7500, DR 600, DR 700	
Measurement Ranges	1, 2, 5, 10, 20mm for Gauging sensors, 1mm to 300mm for Displacement sensors	
Actuation	Spring, Pneumatic, Feather Touch, Ultra-Feathertouch	
Measurement Modes	Standard, Dynamic, Buffered	Standard, Dynamic, Buffered (included as standard)
Resolution	User selectable $<0.1\mu m$	
Mechanical Construction of Electronics Modules	Die-cast Aluminium	Nylon and ABS plastic
Electrical Immunity[2]	CE Marked	CE Marked
Operating Temperature (PIE / T-Con)	0° to +60°C	0° to +60°C
Electrical / Software Compatibility	Orbit 3 is completely electrically compatible with Orbit 2 and software	
Mechanical Compatibility	Orbit 3 is mechanically compatible with Orbit 2 when mounted at the start or end of the Orbit 2 stack	

1 External power supplies required for >10 modules
2 EN6100-6-3 and EN6100-6-2 (2005)