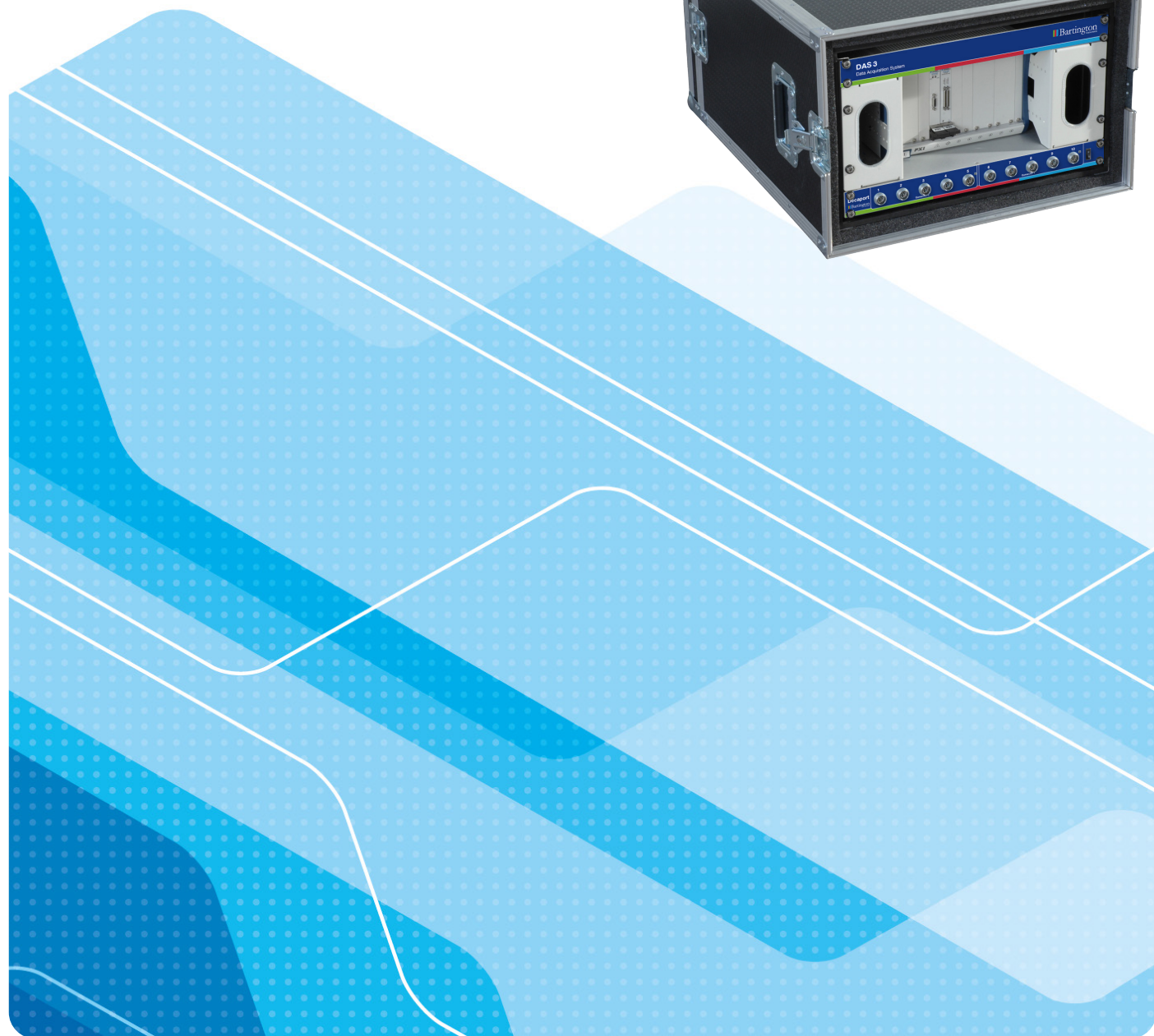


DAS3

Data Acquisition System

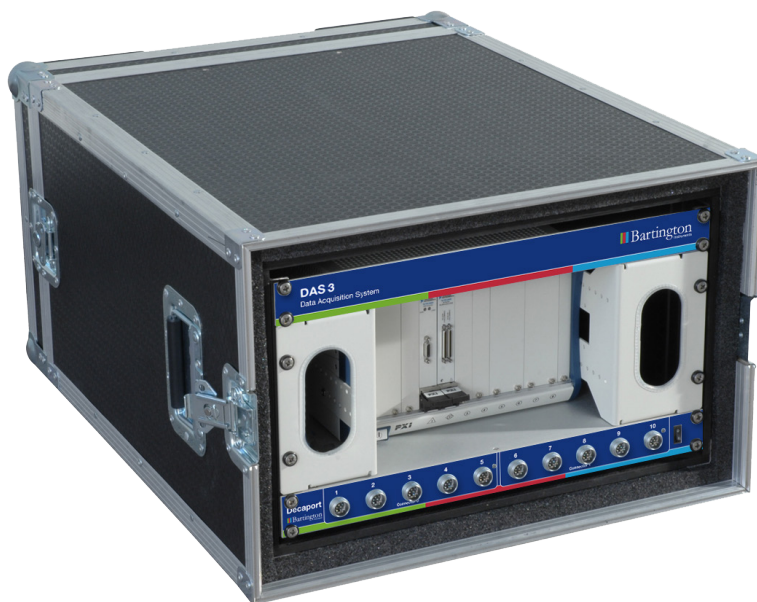




DAS3 Data Acquisition System

A multi-sensor data acquisition system comprising of one Decaport, an NI PXIe controller, with one NI DAQ, designed to sample and process measurements from a wide range of Bartington Instruments three-axis magnetometers. Suitable for any application requiring many sensors to be handled.

Additional digital switch cards are required alongside the ADCs.



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Bartington® is used under licence by Bartington Instruments Limited.

Features

- Compatible with most Bartington® Instruments sensors.
- Supports 40 three-axis magnetic field sensors.
- Programmable LabVIEW™ software included.

Product Identification

The DAS3 system can be specified as follows:

Product Name	Decaports
DAS3-10	1
DAS3-20	2
DAS3-30	3
DAS3-40	4

Hence DAS3-1 is a DAS3 system with 1 Decaport and 1 PXIe DAQ. The Decaport has 10 x sensor inputs.



Specifications

The minimum DAS3 system comprises:

- Decaport Analogue Interface Module
- PXIe Data Acquisition Unit
- 19" rack case
- Rugged enclosure
- Flight case.

Mechanical	
Enclosure	Wheeled 19-inch rack-mounting case
Dimensions: With covers fitted (not including wheels) Without covers fitted	740mm D x 575mm W x 424mm H (1 Decaport, +44mm for additional 1U slot) 630mm D x 575mm W x 424mm H
Weight	>80KG

Cables

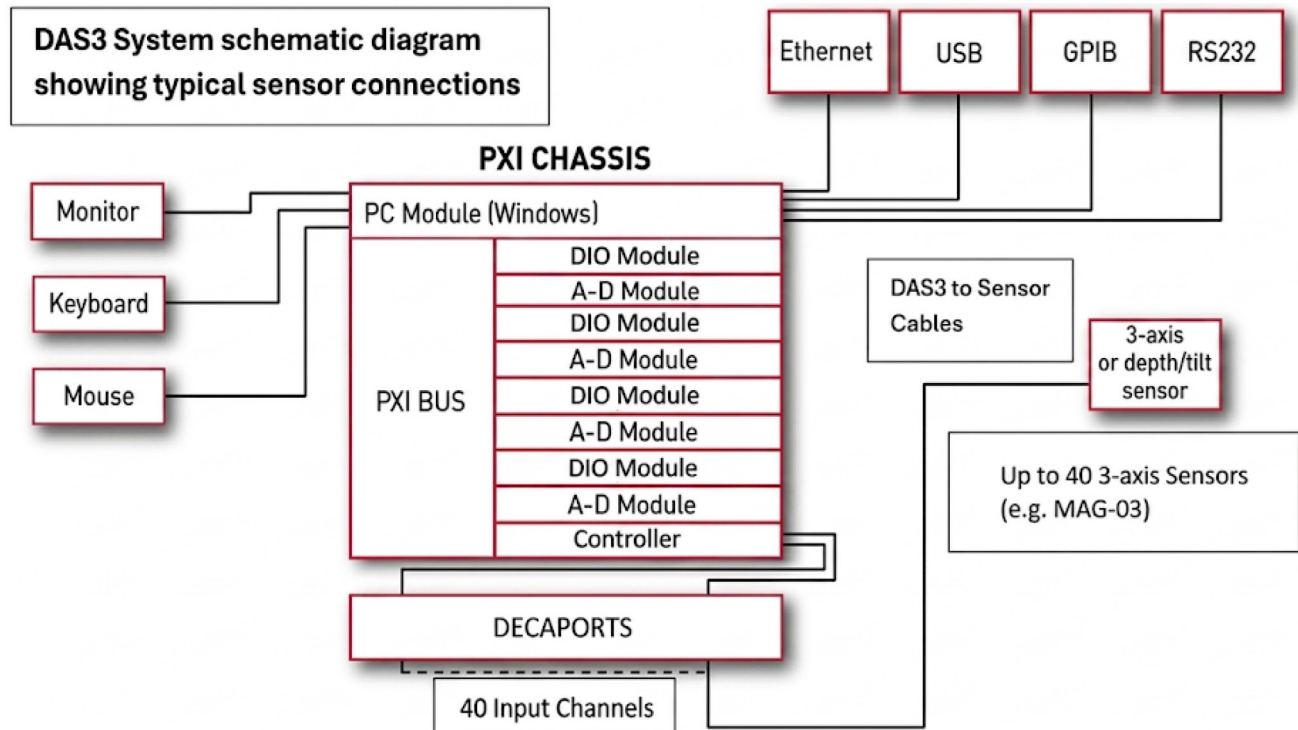
Each system can be supplied with land or marine compatible cables (up to 1km length, sensor dependent) for connecting the sensors to the Decaport. One metre cables for connecting the Decaport to the PXIe Data Acquisition Unit are supplied as standard.

Compatibility

The DAS2-10 system is also compatible with depth, tilt, and pressure sensors.

Compatible Products	
DTS-1 (Depth/Tilt Sensor)	Mag-03, Mag-13, and CryoMag
Mag-03RC	Mag610 & Mag611
Mag646, Mag670 & Mag710	Mag690

Hardware



Decaport Analogue Interface Module

Each Decaport Analogue Interface Module has 30 input channels, allowing connection of up to 10 three-axis sensors.

The Decaport is primarily intended to support Bartington® Instruments' magnetic field sensors, but incorporates programmable features to support a wide range of sensor types (e.g. depth, pressure, e-field). It is software-configurable for single-ended or differential analogue sensor inputs, anti-aliasing filters, frequency response and sensor supply voltage.

The Decaport also provides power when used with the Bartington® Instruments range of sensors.



Features

- Single-ended analogue output to PXIe Unit
- Option to monitor the sensor power supply voltage, current and electrical leakage
- Ability to activate the magnetometer test function (when available on magnetometer)
- Comprehensive ESD surge protection on the sensor input
- Standard 19-inch rack-mounting
- Operates with sensor cables up to 1km long (sensor dependent)



Specifications

Performance	
Number of input channels	10 three-axis magnetic field sensors
Signal input voltage	$\pm 10\text{V}$ differential or single-ended
Common mode input voltage	$\pm 8\text{V}$: balanced / differential output sensors $\pm 3\text{V}$: single ended sensors
Absolute maximum input voltage	$\pm 15\text{V}$ on any input pin
Sensor power output	$\pm 12\text{V}$ or $\pm 14\text{V}$ limited to 50mA per sensor channel Sensor power supply voltage, current and electrical leakage monitoring Power output protected by self-resetting semiconductor fuses
ESD protection	Comprehensive ESD surge protection on the sensor input
Filter	Type Butterworth 2-pole 12dB per octave low pass Frequencies (software selectable): 10kHz, 1kHz, 100Hz, 10Hz
Maximum cable length (recommended)	1km
Power supply voltage	85 to 264 V AC 50/60Hz automatic selection
Power supply current	1100mA (115V) / 640mA (240V) typical
Analogue outputs	Balanced $\pm 10\text{V}$ each leg
AFPI Inputs	5V TTL Logic compatible

Environmental	
Operating temperature range	-20°C to +70°C
Relative humidity	0 to 90% non-condensing

Mechanical	
Enclosure	Aluminium
Dimensions	484 x 44 x 284mm
Weight	3kg
Input connector (Front panel)	Hirose RM15-TRD-10P
Output connector (Rear panel)	68-way Harting 6001 068 5232
Power input (Rear panel)	3-way IEC with integral filter (standard mains cable provided)
Auxiliary connector (Rear panel)	15-way D-type
Mounting Arrangements	19-inch rack-mount - 1U

PXle Data Acquisition Unit

The PXle Data Acquisition Unit is a rugged, modular, programmable PC-based system that can perform Analogue-to-Digital conversion and most data processing requirements for the analysis of signals from arrays of magnetometers. A chassis-based, plug-in board design allows flexibility in configuration.

The standard chassis includes 8 expansion slots. Each A-D board has 30 input channels supporting up to 10 three-axis sensors connected via a Decaport unit. Hence a fully populated large chassis can process data from 80 three-axis sensors. Data sampling rates will be dependent on the application software, but the PXle Data Acquisition Unit hardware can sample all channels at a rate of up to 16.625ks/s with 16 bit resolution.

Specifications

Performance: PXle Chassis PXle-1088 (Part Number 784782-01)	
Input Rating	100 to 240 VAC, 50/60Hz, 7 to 3.5A
Operating Temperature Range	0°C to 40°C
Storage Temperature Range	-40°C to 71°C
Relative Humidity	20 to 80%, non-condensing
19-inch Rack Mount Kit	787525-01
Slot Blockers	199198-01
Power Cable (UK)	763064-01

Performance: PXle Controller / PC: PXle-8822 (Part Number 788815-01)	
Processor	Intel i3 11100HE 2.4GHz 4-cores
Memory (RAM)	8GB
Storage (ROM)	512GB SSD
USB Ports	4 x USB 2.0 2 x USB 3.0
Ethernet	2 x i225
Serial port (RS232)	Yes
GPIO (IEEE 488 controller)	No
Operating System	Windows 11 64-bit

Performance: NI PXIe-6509 Digital I/O Module 96 Channels (Part Number 787358-01)

Input/Output	5V TL/CMOS
Number of input/output channels	96 bidirectional digital I/O lines
Output voltage	0-5.5V
Output drive	±24mA sink or source per channel
Switching rate	100KHz to 1MHz

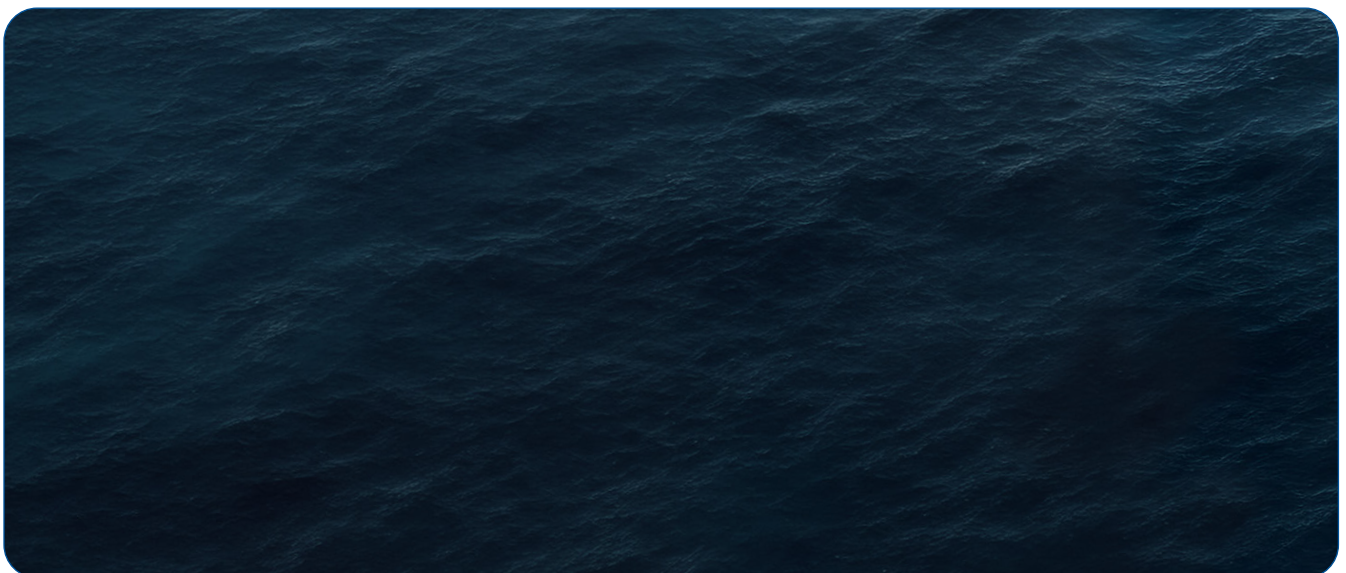
Optional Items

KVM	Optional built-in keyboard, mouse and monitor
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The latest specifications for National Instruments™ components (PXIe-1088, PXIe-8822, PXIe-4303, PXIe-4300, and PXIe-6509) can be found at www.ni.com.

Sample rate versus number of channels

Number of magnetometers	Number of data channels	Sample rate (Ksamples/sec)	Bandwidth (kHz)
1-10	3-30	51.2	23.04



Software

The DAS3 is supplied with Windows™ 11 installed and with a DAS3 software application, based on LabVIEW™. This lets users quickly configure the DAS3 to monitor signals from attached sensors and establish that the system is functioning correctly, without providing the functionality of a full magnetic range facility.

As the software requirements for each individual range implementation will vary, please contact Bartington® Instruments to discuss the software options that are available.



The specifications of the products described in this brochure are subject to change without prior notice.

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