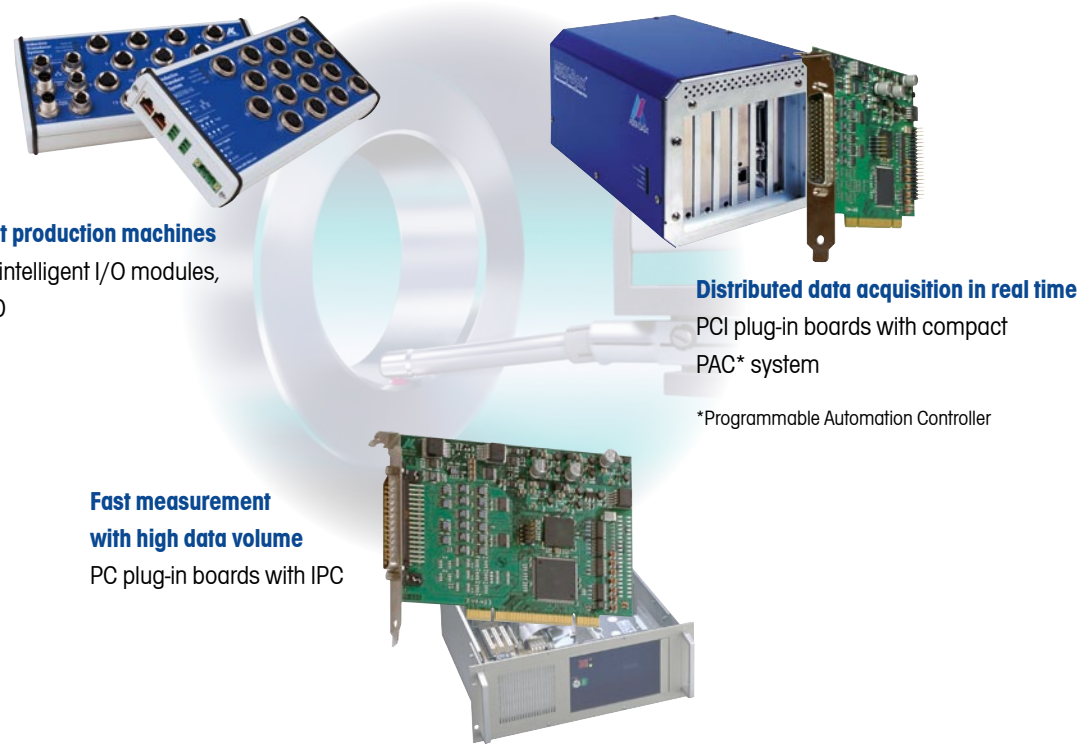
How do you measure?

Tolerances in production quality control are becoming smaller every day. The fast and safe acquisition of variations in the µm range requires efficient transducers and high-precision processing electronics.

Find the right measuring solution at ADDI-DATA:
Whether PC based or distributed via Ethernet, with numerous channels or with simultaneous acquisition of several channels, choose the measuring instrument which best suits your requirements.

Three ways to measure lengths

Specification tests, part tests, dimensional inspection or process control are some of the numerous ranges of application for inductive and incremental transducers. All these applications have something in common: the test items must be measured and processed fast, safely and precisely.
Nonetheless the requirements of such measurements often vary. This is why ADDI-DATA offers different solutions for processing inductive and incremental transducers in rough industrial environments. All solutions are available in the long term and therefore secure your investments.



Direct use at production machines
Distributed, intelligent I/O modules,
IP 65 / IP 40

Distributed data acquisition in real time
PCI plug-in boards with compact
PAC* system

*Programmable Automation Controller

Fast measurement
with high data volume
PC plug-in boards with IPC

Three ways to measure lengths

Which solution for your application?

Type of application	Product	Number of channels	Type of transducer	Dynamic measurement	Intelligent system	Distributed	Compact housing	Degree of protection	Data volume	Real time (ms range)	Cascadable
Direct use at production machines MSX-E modules for **distributed** measuring tasks	MSX-E370x	4, 8 or 16	LVDT, Half-Bridge	No	32-bit ARM processor	Yes	Yes	IP 65 / IP 40	See example with transducer TESA GT21 (p. 4)	Yes (1) No real time via Ethernet port	Yes
	MSX-E3711	8	LVDT, Half-Bridge	Yes	32-bit ARM processor	Yes	Yes	IP 65		Yes (1)	Yes
	MSX-E1701	4	Digital transducers	Yes	32-bit ARM processor	Yes	Yes	IP 65		Yes (1)	Yes
Distributed data acquisition in real time PC boards with PAC system	MSX-Box	16 to 48	LVDT, Half-Bridge	Yes (with APCI-3702)	64-bit RISC processor	Yes	Yes	IP 31		Yes < 1 ms (depends on the type of transducer)	Yes
Fast measurements which high data volumes Plug-in boards with IPC	APCI-3701	16	LVDT, Half-Bridge	No	Depends on the PC	No	No	Depends on the PC		Yes (IPC + APCI-3701)	Yes
	APCI-3702	5	LVDT, Half-Bridge	Yes	Depends on the PC	No	No	Depends on the PC		Yes (IPC + APCI-3702)	Yes

(1) Real-time application when using several cascaded MSX-E modules which are synchronised through trigger/synchro

Connection of inductive transducers of many manufacturers and types - Calibration tool with transducer library

The calibration tool SET3701 guides you from the selection of a transducer from a database including more than 50 pre-calibrated transducers up to testing each single channel. The tool SET3701 is free and is included with each of the three solutions.
You will find the list of the supported transducers on the web at www.addi-data.com.:

- List for the Ethernet MSX-E modules MSX-E370x
- Transducer list for the PC plug-in boards APCI-3701 and APCI-3702

Throughput comparison chart

The right speed for your application

With this chart, you can see at once which solution best suits your speed requirements. The values have been measured with a TESA GT 21 transducer.

Example with TESA GT21

For the acquisition of one channel the Ethernet module MSX-E370x-4 offers a sampling rate of 12500 Hz. If 4 channels are sampled with the same module, then one acquisition sequency lasts 2,55 ms. This value results from the sampling frequency and the settling time.
For the fast acquisition of several signals, the Ethernet module MSX-E3711 and the PCI length measurement board APCI-3702 are suited with respectively 0.08 ms and 0.072 ms acquisition time for 8 or 5 channels.

Product	Type of acquisition	Number of channels	Sampling frequency for 1 channel (Hz)	Settling time (Number of periods)	Sampling frequency (Hz) for 1 sequence of		Sampling period (ms)
MSX-E370x-4	multiplexed	4	12500	8	4 channels	391	2.56
MSX-E370x-8	multiplexed	8	12500	8	8 channels	195	5.12
MSX-E370x-16	multiplexed	16	12500	8	16 channels	98	10.24
MSX-E3711	simultaneous	8	12500	0	8 channels	12500	0.080
APCI-3701	multiplexed	16	13951	8	16 channels	109	9.17
APCI-3702	simultaneous	5	13951	0	5 channels	13951	0.072

Distributed, intelligent Ethernet I/O modules

Ethernet I/O module MSX-E370x for length measurement

ARM®9 Technology

With the intelligent Ethernet I/O modules MSX-E3701 and MSX-E3700, ADDI-DATA offers a new distributed platform for the acquisition of displacement transducers, based on the ARM®9 technology.

Distributed acquisition of 16 LVDT or Half-Bridge transducers

- Distributed Ethernet systems with ARM®9 technology
- Direct connection of 16 transducers
- 18-bit resolution
- Degree of protection IP 65 or IP 40
- Optical isolation 1000 V
- Possibility of diagnostics at short-circuit or line break
- Standard Ethernet technology
- Cascadable
- Synchronisation, also with other types of I/O modules: counter / digital I/O, analog input and analog output
- External trigger
- Connection of inductive transducers of many manufacturers and types

Software

- Calibration tool
- Driver for Windows XP/2000
- Numerous samples

Accessories

- Mounting set for mounting on DIN rail or on devices and machines
- Connection cable for power supply, trigger/synchro and Ethernet

More information

Distributed, intelligent Ethernet I/O modules

Intelligent Ethernet I/O module MSX-E3711

ARM®9 Technology

Distributed, dynamic measurements

- Distributed Ethernet systems with ARM®9 technology
- Synchroneous acquisition of 8 LVDT or Half-Bridge
- Acquisition every 80 µs possible
- No settling time
- 18-bit resolution
- Optical isolation 1000 V
- Possibility of diagnostics at short-circuit or line break
- Degree of protection IP 65
- Cascadable
- Synchronisation, also with other types of I/O modules: counter / digital I/O, analog input and analog output
- External trigger
- Connection of inductive transducers of many manufacturers and types

Software

- Calibration tool
- Driver for Windows XP/2000
- Numerous samples

Accessories

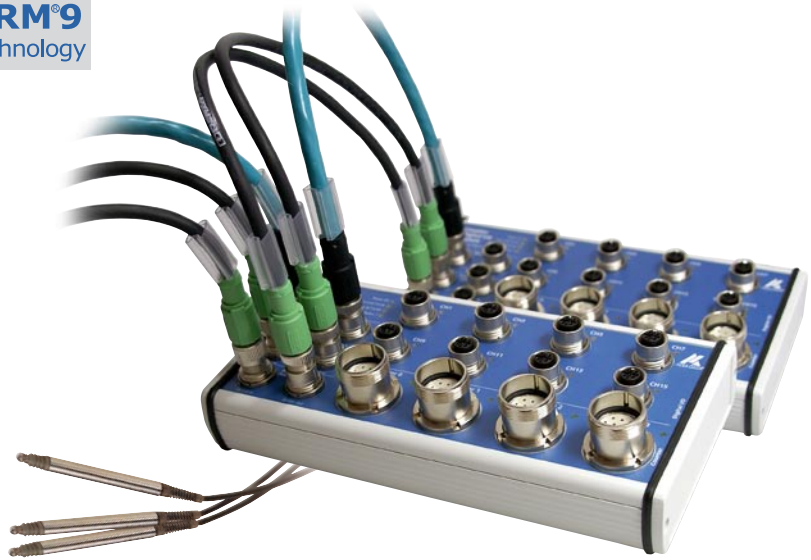
- Mounting set for mounting on DIN rail or on devices and machines
- Connection cable for power supply, trigger/synchro and Ethernet

More information

Distributed, intelligent Ethernet I/O modules

Intelligent Ethernet I/O module MSX-E1701

ARM®9 Technology



Distributed acquisition of incremental transducers

- Distributed Ethernet system with ARM®9 technology
- 4 counter inputs with A, B, C (Index) and D (Ref.) signals
- Counting frequency: 5 MHz in direct mode
- Compare logic
- 16 digital I/O, 24 V
- 18-bit resolution
- Dynamic measurement via 24 V digital trigger input
- Degree of protection IP 65
- Optical isolation 1000 V
- Extended temperature range - 40°C to + 85°C
- M12 and M23 connectors
- Cascadable
- Synchronisation, also with other types of I/O modules: counter / digital I/O, analog input and analog output

Software

- Driver for Windows XP/2000
- Numerous samples

Accessories

- Mounting set for mounting on DIN rail or on devices and machines
- Connection cable for power supply, trigger/synchro and Ethernet

More information

Plug-in boards with compact, real-time PAC system

PAC* system MSX-Box

Distributed length measurement in real time

- Distributed Open Source PAC system for MSR applications
- Open and scalable
- Real-time operating system Linux with RTAI
- Web server functions, FTP server, SOAP interface
- Communication via standard Ethernet (TCP/IP)
- PCI backplane with PCI length measurement boards or other functionalities
- Free development tools for an individual system
- No necessity to update
- Royalty-free, perfect for serial equipment
- 64-bit MIPs processor
- Field bus interface (CAN, Interbus Master, Profibus Slave, RS232/RS485)

More information

*** What is a PAC system?**

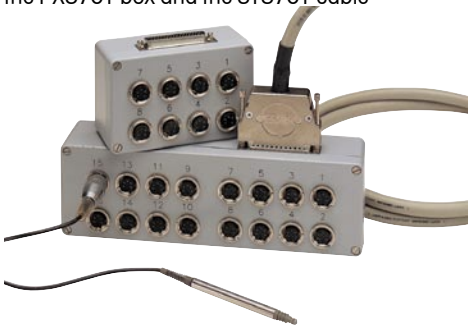
A PAC system (Programmable Automation Controller) is an efficient MSR system, which allies the advantages of both the PLC and the PC worlds. In addition, it features an open and flexible software architecture.

The mains features of a PAC systems are:

- Compact and robust design
- Freely programmable
- Standard Ethernet communication interface (TCP/IP)
- CPU board controls the complete system
- Different I/O modules

Length measurement board APCI-3701

Connection of the inductive transducers through the PX3701 box and the ST3701 cable



Acquisition of 16 LVDT or Half-Bridge transducers with fast PC board

- Acquisition of different transducer types with one board possible
- 16-bit resolution
- Optical isolation 1000 V
- Possibility of diagnostics at short-circuit or line break
- 16 digital inputs/outputs, optically isolated
- PCI-DMA
- Trigger

Software

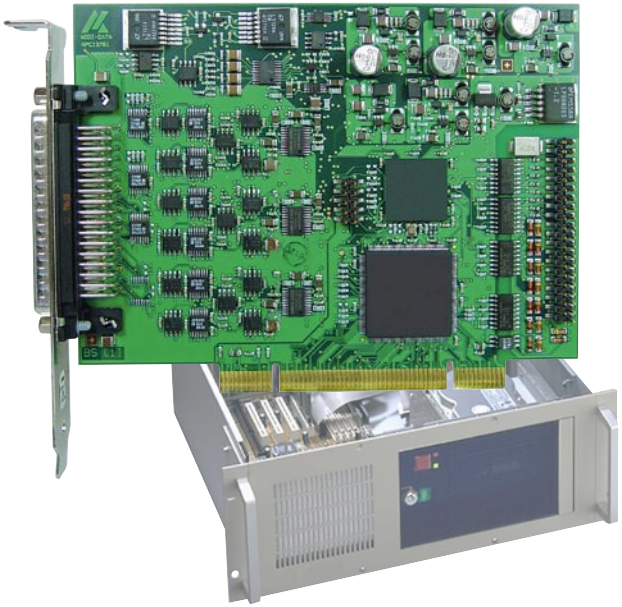
- Free calibration tool
- Driver for Windows XP/NT/98
- Numerous samples

Accessories

- Connection box for the transducers
- Connection cable

More information

Length measurement board APCI-3702



PC-based dynamic measurement

- Simultaneous acquisition of 5 LVDT or Half-Bridge
- Acquisition every 80 µs possible
- No settling time
- 16-bit resolution
- Optical isolation 1000 V
- Possibility of diagnostics at short-circuit or line break

Software

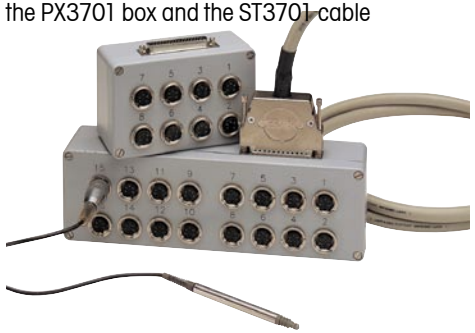
- Free calibration tool
- Driver and Samples in Vorbereitung

Accessories

- Connection box for the transducers
- Connection cable

More information

Connection of the inductive transducers through the PX3701 box and the ST3701 cable



Links and request form

Product links on addi-data.com

Click on the links below for fast additional information about the presented products.

Ethernet I/O modules **MSX-E370x** for 4 to 16 LVDT/Half-Bridge
Ethernet I/O modules **MSX-E1701** for 4 incremental transducers
PAC system **MSX-Box** with plug-in boards for LVDT/Half-Bridge
and incremental transducers
PCI length measurement board **APCI-3701** for 8 to 16 LVDT/Half-Bridge
PCI length measurement board **APCI-3702** for dynamic measurement

Do you require more information by mail?

Select the products you are interested in
and fax this page to: ++49 7223 9493-97

☐ MSX-E370x
☐ MSX-E3711
☐ MSX-E1701
☐ MSX-Box + APCI-3701/APCI-3702
☐ APCI-3701
☐ APCI-3702
☐ Product guide
☐ Other:.....

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