

THREE WAYS TO MEASURE LENGTHS

Whether PC-based or distributed via Ethernet, many channels or synchronous acquisition of several channels, choose the instrument which suits your requirements best – we have the right solution for you!



For use very close to the test item



SHORTINFO

- All module types can be cascaded and synchronised
- Degree of protection IP 65 or IP 40
- Optical isolation
- Compact systems for use very close to the test item
- LED status display for fast error diagnostics
- Direct use with MS Excel without programming skills
- Easy use e.g. with .NET and LabVIEW[™] through web services (WSDL files)

INTELLIGENT SYSTEM

- ARM®9 technology: Intelligent system
- Linux Embedded: For application pro-gramming
- Web server: For easy module configuration and monitoring as well as for CSV file export e.g. into MS Excel
- SOAP command server (Webservices, WSDL): For easy use e.g. with .NET and I abVIFW™
- Data server (TCP/IP or UDP socket): Standard communication modes
- Event server: For forwarding events
- NTP client: For module time setting For PLC users:
- UDP command server and UDP Modbus server: For optimal PLC connection

Intelligent Ethernet modules for length measurement

Acquisition of different inductive transducers



MSX-E370x

- Direct connection of up to 16 inductive transducers of many different types by many manufacturers
- 24-bit resolution
- Possibility of diagnostics at shortcircuits or line break
- Temperature range: 0°C to 60°C
- IP 40 or IP 65

Synchronous acquisition of 8 inductive transducers

MSX-E3711

- Synchronous acquisition of 8 LVDT, half-bridge or VLDT transducers
- 1 incremental counter input
- 1 input for temperature measurement (Pt 100)
- Parallel acquisition every 50 µs on 8 channels possible
- (depending on the type of transducer) • 24-bit resolution
- · Possibility of diagnostics at short-circuits or line break
- Extended temperature range - 40°C to + 85°C
- IP 65

Acquisition of digital transducers

MSX-E17xx

- 4 counter inputs with A, B, C (Index) and D (ref.) signals
- Incremental transducers and $sin/cos transducers (11 \mu A_{ss}, 1 V_{ss})$
- Counting frequency: 5 MHz in direct mode
- Compare logic
- 16 digital I/O, 24 V, configuration as IN or OUT
- Dynamic measurement through a 24 V digital trigger input
- Extended temperature range - 40°C to + 85°C • M12 and M23 connectors
- IP 65



Technology

Fast measurements with high data volume

Connection of inductive transducers through PX3701 box and ST3701 cable



PC plug-in boards with IPC

Length measurement board APCI-3701



Acquisition of 16/8 LVDT/halfbridge transducers with fast PC board

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

• Trigger

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

Accessories

- Connection box for transducers
- Connection cable

Length measurement board APCI-3702



PC-based dynamic measurement

- Simultaneous acquisition of 5 LVDT or half-bridge transducers
- Parallel acquisition every 51 µs on 5 channels possible (depending of the type of transducers)
- No settling time
- 16-bit resolution
- Optical isolation 1000 V
- Possibility of diagnostics at short-circuit or line break

Software

- Free calibration tool
- Drivers and samples
- 64-bit Vista signed drivers
- Accessories
- Connection box for transducers
- Connection cable

Connection of inductive transducers of many types by many manufacturers

- Calibration tool with transducer library

The calibration tool guides you from the selection of a transducer from a database of pre-calibrated transducers up to testing each single channel.

The tool is free and included with each of the three solutions. You will find the list of the supported transducers on the Internet at

www.addi-data.com

Distributed data acquisition in real time

PAC SYSTEM

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

The main features of a PAC system are:

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

PAC system MSX-Box

Distributed length measurement in real time

- Distributed open source PAC system for measuring and control 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 PC boards with other functionalities
- Free development tools for an individual system
- No updates required
- Royalty-free, perfect for serial equipment
- 64-bit MIPs processor
- Field bus interface (CAN, Interbus Master, Profibus Slave, RS232/RS485)

More information at: www.msx-box.com

OPEN SOURCE INSIDE

- Based on the Debian distribution
- Integrated Eclipse[®] development environment
- Debugging via GDB / KGDB (user and kernel mode)
- Compiling with Mipsel-linux-gcc 2.95 and 3.3 possible
- Calculation and visualisation package Scilab © INRIA-ENPC





real-time PAC system

PC plug-in boards with compact

LENGTH MEASUREMENT COMPARISON

Which solution for your application?

	Use close to the test item MSX-E-modules for distributed measurement applications			PC board	asurements h data s ds with IPC	Distributed data acquisition in real time PC boards with PAC system	
Product	MSX-E370x	MSX-E3711	MSX-E17xx	APCI-3701	APCI-3702	MSX-Box	
Number of channels	4, 8 or 16	8	4	16	5	16 to 48	
Type of transducer	LVDT, VLDT, Half-Bridge	LVDT, VLDT, Half-Bridge	Digital transducers	LVDT, Half-Bridge	LVDT, Half-Bridge	LVDT, Half-Bridge	
Dynamic measurement	No	Yes	Yes	No	Yes	Yes (with APCI-3702)	
Intelligent system	32-bit ARM®9 processor	32-bit ARM®9 processor	32-bit ARM®9 processor	Depending on the PC	Depending on the PC	64-bit RISC processor	
Distributed	Yes	Yes	Yes	No	No	Yes	
Compact housing	Yes	Yes	Yes	No	No	Yes	
Degree of protection	IP 65 / IP 40	IP 65	IP 65	Depending on the PC	Depending on the PC	IP 31	
Data volume	See example with transducer TESA GT21						
Real time (ms range)	Yes (1) No real time via Ethernet port	Yes (1)	Yes (1)	Yes (IPC + APCI-3701)	Yes (IPC + APCI-3702)	Yes < 1 ms (Depending on the type of transducer)	
Cascadable	Yes	Yes	Yes	Yes	Yes	Yes	

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

Throughput comparison chart

The right speed for your application: 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 sequence 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 for 8 or 5 channels with an acquisition time of 0.008 ms and 0.0072 ms respectively.

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

TESA GT21	MSX-E370x-4	MSX-E370x-8	MSX-E370x-16	MSX-E3711	APCI-3701	APCI-3702
Type of acquisition	multiplexed	multiplexed	multiplexed	simultaneous	multiplexed	simultaneous
Number of channels	4	8	16	8	16	5
Sampling frequency for 1 channel (Hz)	12500	12500	12500	12500	13951	13951
Settling time (Number of periods)	8	8	8	0	8	0
Sampling frequency (Hz) for 1 sequence of	4 channels 391	8 channels 195	16 channels 98	8 channels 12500	16 channels 109	5 channels 13951
Sampling period (ms)	2.56	5.12	10.24	0.008	9.17	0.0072



THE THREE WAYS

How do you measure?

Specification tests, part tests, dimentional inspection or process control are some of the numerous ranges of application for inductive and digital transducers.

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 digital transducers in rough industrial environments.

All solutions are available in the long term and therefore secure your investment.

The 3 ADDI-DATA solutions for length measurement



Close to the test item Distributed, intelligent Ethernet I/O modules, IP 65 / IP 40

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



Distributed data acquisition in real time PC plug-in boards with compact PAC system (PAC = Programmable Automation Controller)

Contact-free length measurement

You would like to measure test items contact-free, e.g. with a laser sensor? We offer alternatives for the PC as well as for distributed Ethernet applications – Contact us!

ENQUIRY FORM

SERVICE FAX + 49 7229 1847 222 Please send me information about the following products:							
 MSX-E370x MSX-E3711 MSX-E3711 APCI-3702 MSX-Box MSX-E17xx 	 Please send me the product catalog 2008 Digital on CD-ROM Print edition 						
Company	I wish to receive the information via e-mail at:						
Name, title	Please call me on the phone at:						
Street	□ Yes, I would like to receive the ADDI-DATA						
Postal code / City	newsletter via e-mail						

