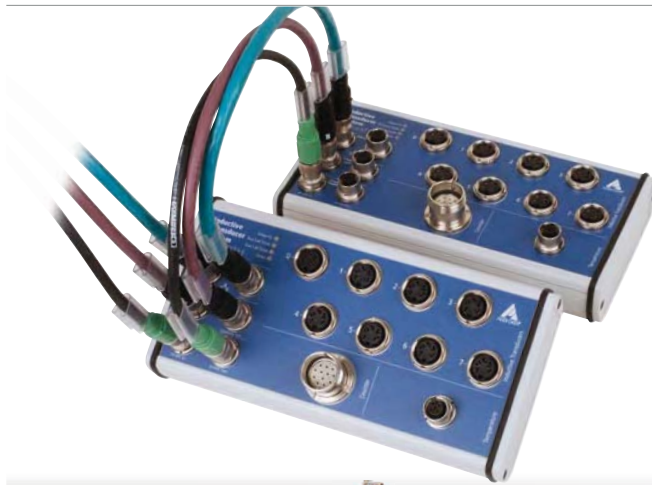


Ethernet system for length measurement, 24-bit, simultaneous, 8 transducers, counter and temperature inputs



MSX-E3711

Simultaneous acquisition of
up to 8 inductive displacement transducers

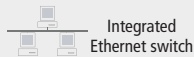
For half-bridge, LVDT, Mahr or Knaebel transducers

1 incremental counter input (32-bit)

1 input for temperature measurement (Pt100)

Dynamic measurement

via 24 V digital trigger input



Integrated
Ethernet switch



+85 °C
-40 °C

*Operating temperature



IP 65



ARM9
Technology



Cascadable, can be
synchronised
in the μ s range



On request:
Compare logic for
synchro trigger signal



on request



DatabaseConnect
see page 66

SPC.kompakt



More information at
www.addi-data.com

With the intelligent Ethernet system MSX-E3711 you can acquire up to 8 half-bridge, LVDT or Mahr-compatible displacement transducers simultaneously with 24-bit resolution. An incremental counter input and an input for temperature measurement (Pt100) supplement the measurement data with temperature and position references. The transducers can be connected directly through the 5-pin M18 connectors.

The systems can be freely cascaded and synchronised in the μ s range. You can thus acquire data from several systems at the same time.

The ARM[®]9 processor allows the system to perform calculations.

The compare logic of the counter or the timer function can generate a synchro trigger signal in order to start acquisitions. The system can trigger its own inputs as well as inputs on another MSX-E system.

Features

- Connection of all commercially available transducers (half-bridge, LVDT, Mahr-compatible, Knaebel)
- 8 channels for length measurement, cascadable
- 24-bit resolution
- 1 incremental counter input
- 1 input for Pt100 for temperature measurement
- Fast distributed data acquisition
- Example for TESA transducers GT21:
Sampling frequency: 12.5 kHz per channel,
sampling period for one sequence,
of 1 to 8 channels: 0.080 ms
- Synchronisation of several systems
- 64 MB onboard SDRAM for storing data
- ARM[®]9 32-bit processor for data processing
- Diagnostics possibility at short-circuits or line break of the transducers
- Robust metal housing, degree of protection IP 65
- Power Save Mode: reduction of the power consumption when no acquisition runs

Acquisition modes:

- Auto-refresh mode: Automatic update of the acquired data in the background
- Sequence mode: Data acquisition in "packages"
- With trigger or synchro input

Safety features

- LED status display for fast error diagnostics
- Optical isolation 1000 V for inductive transducers, counter and temperature measurement
- Input filters
- Diagnostics at short-circuits or line break of the inductive transducers
- Internal temperature monitoring

Interfaces

- Fast 24 V trigger input
- Ethernet switch with 2 ports
- Synchronisation/trigger In/Out
- 24 V supply and cascading

Communication interface

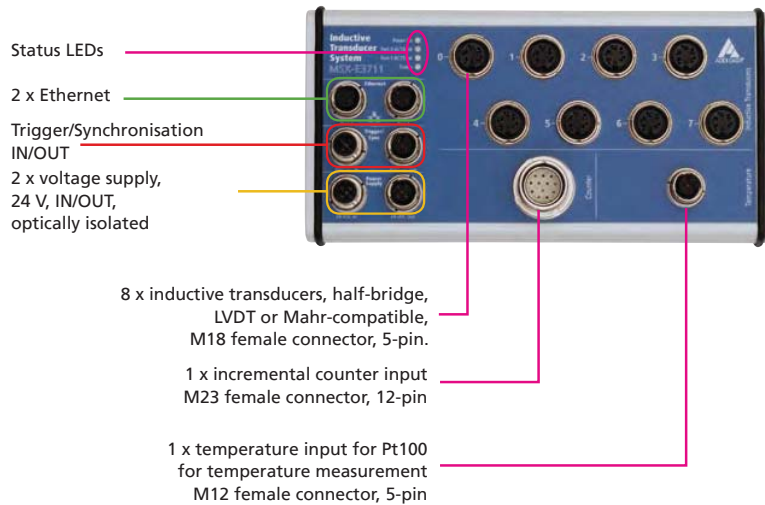
- Web server (configuration and monitoring)
- Command server SOAP for transferring commands
- Data server (TCP/IP or UDP socket) for sending acquisition data
- Event server (TCP/IP socket) for sending system events (Diagnostics such as temperature, short-circuits ...)
- Command server Modbus TCP and Modbus (UDP) for sending commands

Software

- Software drivers for Windows 7 (32-bit)/Vista (32-bit)/XP/2000.
- Software drivers for Windows 7 (64-bit) and Linux on request
- Direct access via SOAP (TCP/IP), WSDL files
- Direct access via Modbus TCP and Modbus (UDP)
- Programming examples .net2005, VC++ 6.0
- Programming examples LabVIEW from 8.5 and for Linux on request
- Instruction manual for connecting a PLC (SIMATIC[®] S7[®])

Driver list on the web: www.addi-data.com

Features

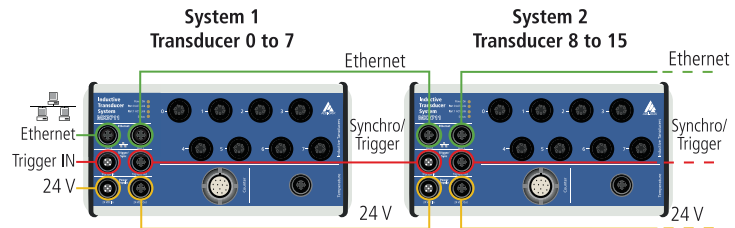


Calibration tool SET3701

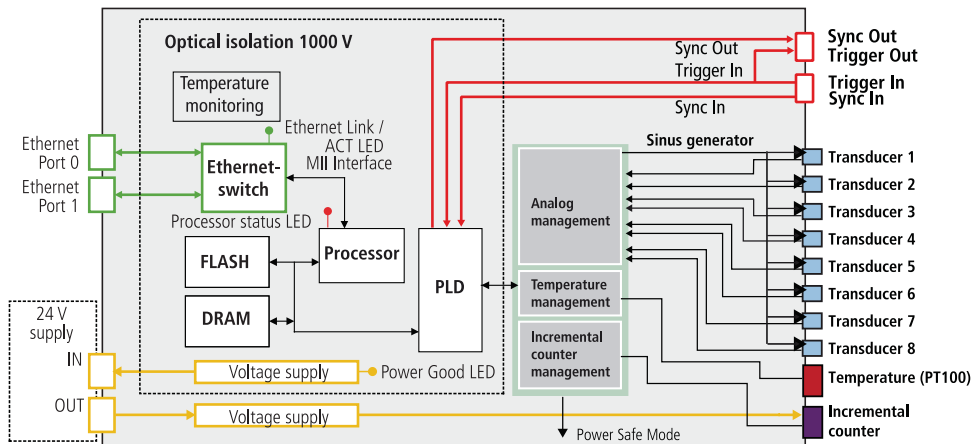


Synchronisation

Ethernet, synchronisation and supply signals can be looped from one system to the next. In this way, you can acquire and process distributed I/O signals directly at production machines. With these features, the MSX-E systems are suited both for simple distributed applications and for complex applications, in which multiple devices with physically widely separated signals have to operate together.



Simplified block diagram



Specifications

Connection of inductive transducers

Inputs for inductive transducers

Channel features:		
Number:	8 x ADC (not multiplexed)	
Input type:	Single-ended	
Coupling:	DC	
Resolution:	24-bit	
Sampling rate f_s :	On 8 channels	At primary frequency f_p of
		5 kHz
	$f_s = f_p$	7.69 kHz
		10 kHz
		12.5 kHz
		20 kHz
		50 kHz

Example with TESA GT21: $f_s = f_p = 12.5$ kHz on all 8 channels

Input level

Input impedance:	2 k Ω	software-programmable
	10 k Ω	
	100 k Ω	
	10 M Ω	

Transducer accuracy: On request

Sensor supply (Sine generator)

Type:	Sine differential (180° phase-shift)	
Coupling:	AC	
Programmed signals:		
Output frequency f_p (primary frequency)	2-20 kHz depending on the transducer (50 kHz Knaebel)	
Output impedance:	< 0.1 Ω typ. > 30 k Ω typ. in shutdown mode	
Short-circuit current:	0.7 A typ. at 25 °C with thermal protection	

Counter

Number of counter inputs:	1
Input type:	Differential inputs or TTL
Differential inputs:	Comply with the EIA standards RS422A
Common mode range:	+12 V / - 7 V
Input sensitivity:	± 200 mV
Input hysteresis:	50 mV typ.

Input impedance:	12 k Ω min.
Max. input frequency:	5 MHz at nominal voltage
"Open Circuit Fail Safe	
Receiver Design"	"1" = inputs open
ESD protection:	Up to ± 15 kV
Voltage supply of the encoder:	5 or 24 V/500 mA max.
Version with 24 V inputs	
This version is designed for the connection of 24 V encoders. Only 24 V signals can be connected to the inputs.	
Nominal voltage:	24 V _{DC}
Max. input frequency:	1 MHz at nominal voltage
Input impedance:	1 M Ω typ.
Logic input levels:	
UH (max.)	30 V typ.
UH (min)	18 V typical (on request)
UL (max.)	16 V typical (on request)
UL (min)	0 V typical

Temperature measurement

Number of inputs:	1
Type:	RTD Pt100
Connection:	4-wire
Temperature range:	-200 to 850 °C
Resolution:	± 0.01 °C

System features

Interface:	Ethernet acc. to specification IEEE802.3
Dimensions:	215 x 110 mm x 54 mm
Weight:	760 g
Degree of protection:	IP 65
Operating temperature:	- 40 to + 85 °C
Current consumption at 24 V:	400 mA

Connectors for sensors

For inductive transducers:	8 x 5-pin flange type socket M18
For temperature sensors:	1 x 5-pin flange type socket M12 1-, 2-, 4-wire Pt100
For the counter function:	1 x 12-pin flange type socket M23

Ordering information

MSX-E3711

Ethernet system for length measurement, 24-bit, simultaneous, 8 transducers, counter and temperature inputs.
Incl. technical description and software drivers.

Versions

MSX-E3711-HB:	for 8 HB inductive transducers, 1 counter input RS422
MSX-E3711-LVDT:	for 8 LVDT inductive transducers, 5 V counter input
MSX-E3711-M:	for 8 Mahr-comp. transducers, 5 V counter input
MSX-E3711-K:	for 8 Knaebel transducers, 5 V counter input
MSX-E3711-HB-24V:	for 8 HB inductive transducers, 24 V counter input
MSX-E3711-LVDT-24V:	for 8 LVDT inductive transducers, 24 V counter input

Connection cables

Voltage supply

CMX-2x: Shielded cable, M12 5-pin female connector/open end, IP 65
CMX-3x: For cascading, shielded cable, M12 5-pin

female connector/male connector IP 65

Trigger/Synchro

CMX-4x: Shielded cable, M12 5-pin female connector/open end, IP 65
CMX-5x: For cascading, shielded cable, M12 5-pin
female connector/male connector IP 65

Ethernet

CMX-6x: CAT5E cable, M12 D-coded male connector/RJ45 connector
CMX-7x: For cascading: CAT5E cable, 2 x M12 D-coded male connector

Options

S7 Modbus TCP Client Library for S7: Easy use of the Ethernet systems
MSX-E with PLCs

MSX-E 5V-Trigger: Level change of the trigger inputs and outputs to 5 V
MX-Clip, MX-Rail (Please specify when ordering!), **MX-Screw, PCMX-1x**