

DMF-P A400 advanced

Type 4733A...

Multi-Channel Force/Displacement Measuring System

The multi-channel force/displacement measuring system DMF-P A400, Type 4733A... was especially designed for the application in plants and systems with several joining processes, which are monitored independent from each other.

- Forward-backward measurement
- Traction-compression applications
- Possibility of 4-quadrant measurement
- 32 setpoint records per channel
- 8 evaluation functions/windows per setpoint record
- Graphically editable windows
- Multilingual menu
- Additional window types: Hysteresis, breakpoint, gradient, speed, envelope curve
- Online- and offline evaluations
- Statistics with protocol functions
- Logging of measurement results (I-P.M., Q-DAS, csv, txt, ...)
- 100 curve memories per channel, 1 000 measured value memories per channel (can be extended by memory extension)
- Self monitoring and diagnosis
- Open system for later extensions through modular construction
- Ethernet 10/100 MBit/s for cross linking
- PS/2 keyboard interface for simple operation
- Web server for visualization, modification and filing as well as remote-control via PC
- Network interconnectivity
- Master sample/master check

Description

Starting from the basis of a two channel device the system may be extended by a connection of several devices corresponding to the requirements.

The cross-linking and data exchange both between the devices and with a possible extern visualization is done per Ethernet. The coupling to the unit is effected via fieldbus or corresponding control inputs.

Each device may be operated autonomously in extreme cases. In the same way, the single channels are independent from each other.



The configuration/commissioning is performed by a device with monitor or a PC with web browser. It was taken notice of clear and simple operator guidance.

Continuity to the previous devices of the DMF-P series was maintained and extended by additional functions.

Application, Solution for Assembly Operations

The characteristic for the assembly operation is monitored by adjustable windows.

This allows the operator to define the critical part of the assembly cycle.

The system monitors:

- Threading force
- End position
- Overload
- Variable windows

In addition the speed of the process and the slope of the measuring curve can also be measured and evaluated.

Technical Data

General

Power supply	VDC	24 VDC \pm 10 %
Power consumption	W	<20
Operating temperature range	$^{\circ}$ C	5 ... 50
Storage temperature range	$^{\circ}$ C	0 ... 60
Display	LCD 1/4 VGA with back ground	

Up- and download of setpoint records, external visualization via PC (optional)

Access control	via password
Per channel	32 different setpoint records selectable from PLC; 8 windows per setpoint record; 4 different evaluation methods; measured value storage, curve storage, statistics

Measurement engineering

Resolution of analog inputs	bit	12
Scan rate per measuring input	kHz	5
Measuring points per curve		4 000

Y-channel

Strain gage	supply \pm 1,25/2,5/5/10 V	0,25 ... 5 mV/V accuracy 0,1 % of full scale*
Semiconductor strain gage	mV/V	50 ... 100 accuracy 0,1 % of full scale*
Active	V	\pm 0,5 ... 10 accuracy 0,1 % of full scale*
Piezo	pC	10 000 ... 1 500 000 accuracy \ll 1 % of full scale*

X-channel

Resistive	supply \pm 5/10 V	accuracy 0,2 % of full scale*
Inductive	supply 3,5 V eff. 6 kHz	accuracy 0,2 % of full scale*
Active	\pm 0,5 ... 10 V	accuracy 0,1 % of full scale*
Incremental	counting range/bit	32
SSI absolute	value range/bit	24

Additional sensors are possible, such as torque/rotation angle
0170MS, Type 4502A...
0260DM, Type 4503A...

*without accuracy of the respective sensor

Control signals

Per channel	16 inputs	Volt/VDC	0/24
PLC	16 outputs	Volt/VDC	0/24
Fieldbus	Profibus/Interbus/DeviceNet/ProfiNet IO		
Modbus/Ethernet IP	in preparation		

Interfaces

Ethernet	Mbit/s	10/100
RS-232C	COM1, COM2	baud 9 600 ... 115 200
Keyboard		PS/2
Printer	LPT	25-pin parallel

Housing versions

Weight panel housing IP54	kg	4
Weight table housing IP40	kg	3,2
Weight wall mounted housing IP54	kg	4,3
Dimensions	see illustrations	

Monitoring processes

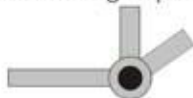
Monitoring of riveting operations



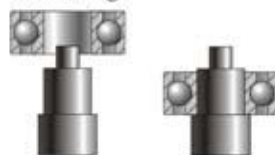
Monitoring of crimping operations



Checking of torque and rotation angle operations



Press-fit monitoring

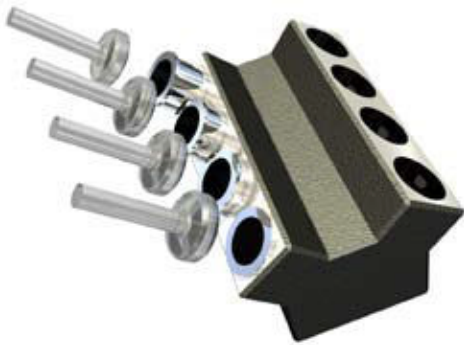


Classification of



Multi-Channel Applications

E.g. Engine block



E.g. Round switch table



Dimensions

Housing version	B	H	T	AB	AH
Table housing	223	158	180	-	-
Panel housing	223	158	180	264	200
Wall mounted housing	228	214	180	228	158

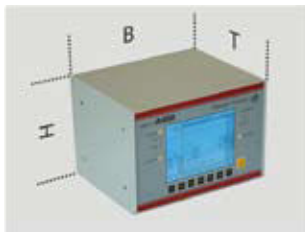
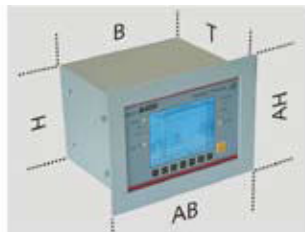


Table housing



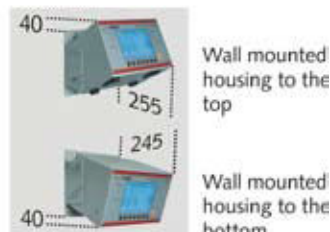
Panel housing



Wall mounted housing



Wall mounted housing with fixing hole



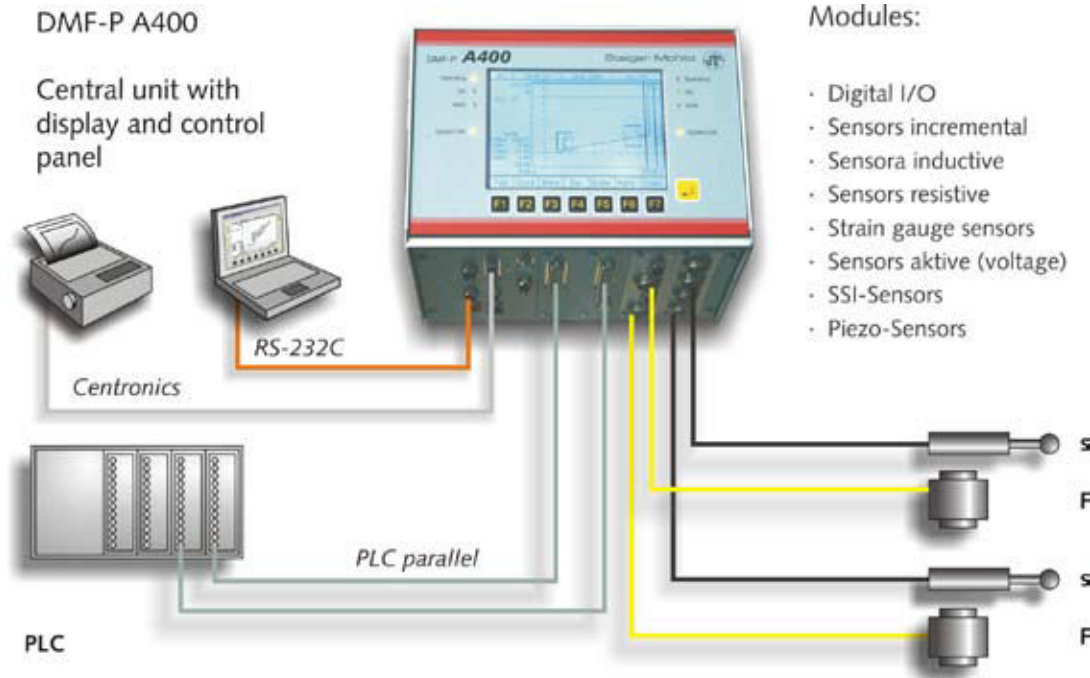
Wall mounted housing to the top

Wall mounted housing to the bottom

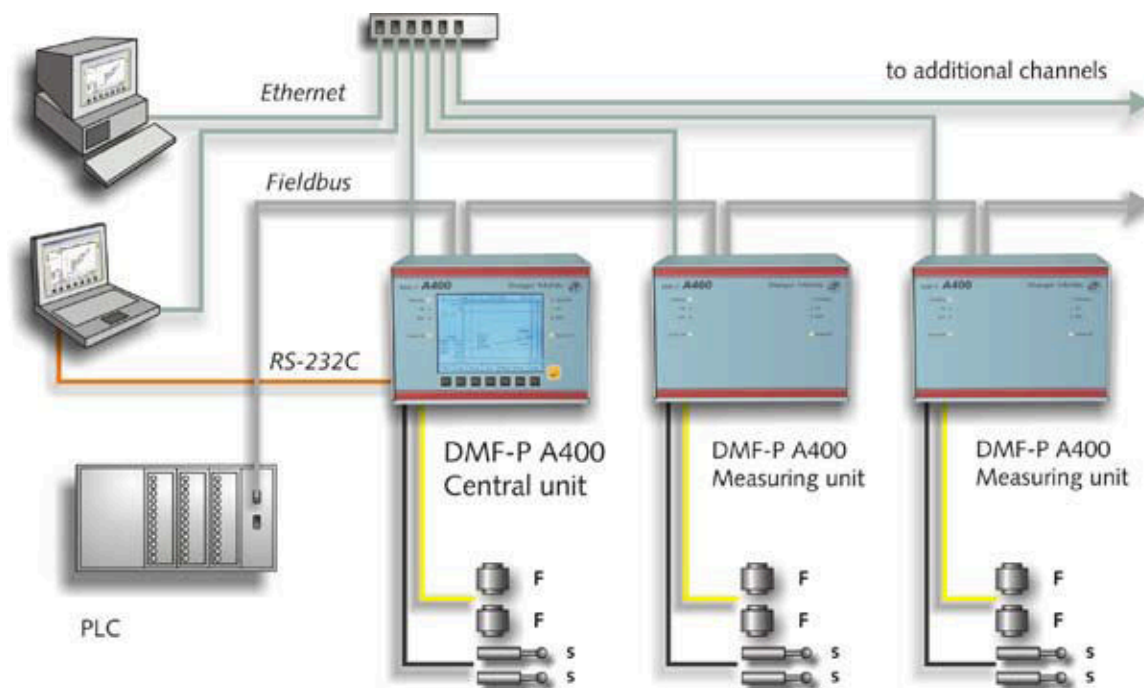
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System Configuration

Measurement and Central Unit, Two-Channel Device



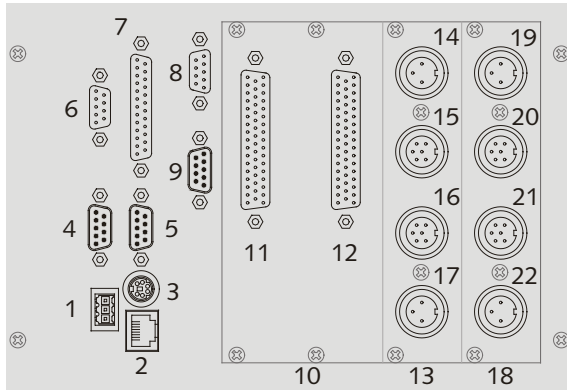
Multi-channel device (max. 8 independent working channels)



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Interfaces/Accessories

Rear View (Example)

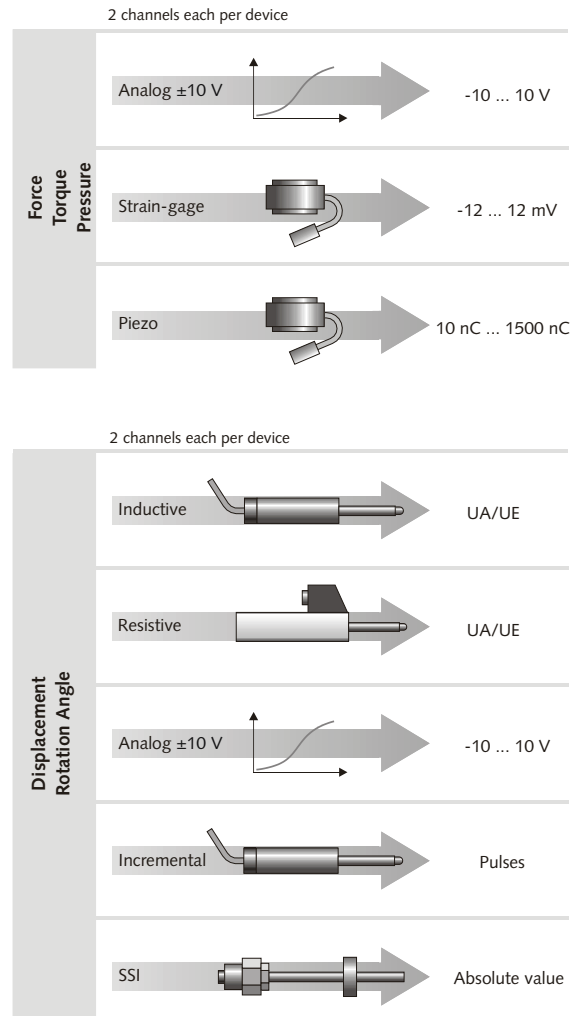


- 1 Supply (24 V DC)
- 2 LAN (Ethernet)
- 3 Keyboard
- 4 Serial interface (COM1)
- 5 Serial interface (COM2)
- 6 Profibus
- 7 Parallel-printer
- 8 Fieldbus (option)
- 9 Fieldbus (option)

10 – 22 are dependent on the configuration, further options are possible.

- 10 Digital module I/O
- 11 PLC-channel A
- 12 PLC-channel B
- 13 Displacement sensors module
- 14 Displacement monitor output channel A
- 15 Displacement input channel A
- 16 Displacement input channel B
- 17 Displacement monitor output channel B
- 18 Force sensors module
- 19 Force monitor output channel A
- 20 Force input channel A
- 21 Force input channel B
- 22 Force monitor output channel B

Measuring Modules



Included Accessories

- Power connector
- Cover for connector

Type/Art. No.

KSM027661
KSM022694

Optional Accessories

- 24 V power supply (120 ... 240 V)
- 24 V power supply (120 ... 240 V) US-plug

Type/Art. No.

KSM028659
KSM028660

Ordering KeyType 4733A **Housing versions**

Wall mounted housing	W
Table housing	T
Panel housing	E

Display LCD 1/4 VGA

Without	0
with Display	D

Sensor input (y-channel) Force

Strain gage	Y1
Aktiv $\pm 0,5 \dots 10$ V	Y2
Piezo 500 000 pC	Y3
Piezo 1 500 000 pC	Y4

Sensor input (x-channel) Displacement

Inductive	X1
Resistive	X2
24 V active	X3
SSI	X4
Incremental	X5

Fieldbus

Profibus	00
Interbus	B1
Modbus (in Vorbereitung)	B2
DeviceNet	B3
ProfiNet	B4
Ethernet IP (in Vorbereitung)	B5

Digital Interface

Without	00
Parallel 2x16 E/A	S1

Order example:

Type 4733AWDY3X20000

Multi-channel force/displacement measuring system

Type 4733A... DMF-P A400, Version **W**: Wall mounted housing, **D**: with Display, **Y3**: Piezo 500 000 pC, **X2**: x-channel resistive, **00**: Profibus, **00**: without digital interface

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