

Measurement and control unit

Control of testing and measured data acquisition

The measurement and control unit handles the monitoring, analysis and control of measurement profiles and testing in the area of fastening technology.

- · Records analog and incremental measurands
- Monitors measurement profiles
- Controls drive units in conjunction with a control unit with servo regulator



Description

The measurement and control unit is a highly integrated, precise and modular measurement control unit used to acquire a broad range of measurands. It captures all the measurement values and handles downstream processing as well as control tasks. The measurement and control tasks are performed in real time, and the testXpert software generates graphic displays of the measurement profiles in near-real time. Once the test has begun, the measurement and control unit handles all the measurement and control tasks autonomously. The PC system with the measurement and visualization of the test.

Application

The measurement and control unit is used to test bolted joints with Kistler analysis systems.

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Technical data

Туре		5413-2777/XE
Measuring channels		Passive, analog (0.4 5 mV/V, Power supply 5 V/10 V short-circuit proof, line-com-
depending on configuration	Channel 16	pensated)
	optional	Active, analog (1 10 V, power supply ± 12 V, max. 3 W, short-circuit proof)
		Incremental (quadrature signal 5 24 V, max. counting frequency 40 kHz, switching
	Channel 16	level 2.5 V)
Integrated calib. resistance		40 kΩ, 58.159 kΩ, 87.15 kΩ, 218.4 kΩ
Achievable meas. uncertainty		≤ 0.5%
Resolution		16-bit
Automatic offset compensation		± 10%
Control reserve (overload capacity)		20%
Anti-aliasing filter		5-pin low-pass with Bessel characteristics, adjustment range: 1 Hz 10 kHz
Adjustment range for sampling		
frequency		1 Hz 20 kHz
Sensor indication		Passive sensors: presence via sensor cable (compensation lead)
		Optional AUTOCODE for appropriately equipped sensors
		Active sensors: type selection and presences via adapter cable with AUTOCODE
Nominal voltage		100 240 V, integrated overvoltage protection (class T3)
Nominal frequency		50 Hz/60 Hz
Connected load		< 100 VA
Communication interface to PC		USB 2.0 (BUS-powered)
Interfaces	Optional /	4 inputs and 3 outputs, electrically isolated
	Channel 1, 2, 3,	(Inputs: permitted input voltage max. + 30 V, switching threshold + 3.9 V,
	5,6	Outputs: permitted voltage max. 42 V AC, 60 V DC, max. switched current 0.1 A)
Plug-in connection sockets	Sensors	ODU flange socket, 16-pin, Type G52LOC-P16NFGO - meas. channel 16 passive an-
5		alog and incremental
		ODU flange socket, 19-pin, Type G52LCC-P19NFDO - meas. channel 2/3 2x passive
		analog for F/T _{th} sensor
		D-Sub DE-15S - meas. channel 16 active analog and incremental
	Control	Tuchel Type C091 12-pin sockets for control of drive units in conjunction with a
	output	control unit with servo regulator
	Control	Tuchel Type C091 7-pin sockets for control elements
	input	Optional I/O D-Sub DE-255
	·	Slots for external calibration resistors
Dimensions (L x W x H)		340 mm x 420 mm x 170 mm
Weight		Approx. 5.2 kg (depending on module quantity and options)
Operating temperature range		10 40 °C
(Nominal temperature range)		
Service temperature range		0 50 °C
Storage temperature range		-20 70 °C
Air humidity		max. 70%, non-condensing
Degree of protection		IP 20
Protection class		I (protective grounding)

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Connections of measurement and control unit 5413-2777/XE..

Pin assignments

ODU flange socket, 16-pin

+ Power supply	- + E	1
+ Compensation	+ C	2
+ Signal voltage	+ S	3
- Signal voltage	- S	4
- Compensation	- C	5
- Power supply	- E	6
Shunt calibration	CAL	7
+ 5V	VCC	8
Sine signal	SIN	9
Cosine signal	COS	10
GND	GND	11
Autocode	DS	12
GND	GND	13
Reserved		14
Reserved		15
Reserved		16

ODU flange socket, 19-pin

obo nange seened, is p		
+ Power supply Tth	+ E	1
+ Compensation Tth	+ C	2
+ Signal voltage Tth	+ S	3
 Signal voltage Tth 	- S	4
- Compensation Tth	- C	5
- Power supply Tth	- E	6
Shunt calibration Tth	CAL ———	7
Autocode	DS	8
GND	GND	9
+ Power supply F	+ E	10
+ Compensation F	+ C	11
+ Signal voltage F	+ S	12
- Signal voltage F	- S	13
- Compensation F	- C	14
- Power supply F	- E	15
Shunt calibration F	CAL ———	16
Reserved		17
Reserved		18
Reserved		19

- 1 USB 2.0 PC
- 2 Control input for control box
- 3 Connections for external calibration resistors
- 4 Measuring channel 1...6 passive, analog and incremental depending on configuration
- 5 Currently not used6 Measuring channel 1...6 active, analog and incremental depending on configuration
- 7 Control output to control unit with servo regulator
- 8 Connection point for equipotential bonding
- 9 Connection to power supply and mains switch with fuse
- 10 Control inputs and outputs (optional)
- 11 Control input and output for vibration test bench (optional)

D-Sub DE flange socket,	15-pin	
+ Power supply	+ E	1
 Power supply 	- E	2
+ Signal voltage (amplified	d) + S	3
GND	GND	4
Shunt calibration	CAL	5
Cosine signal	COS	6
Sine signal	SIN	7
GND	GND	8
CAN-Hi		9
CAN-Lo		10
GND	GND	11
Autocode	DS	12
GND	GND	13
Reserved		14
Reserved		——— 15

10

17

24 25

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D-Sub DE flange socket, 25-pin

Chann	el 1-3		Channe	el 1-6
+ 24V		1	+ 24V	
Q1.1		2	n.c.	
Q1.2		3	n.c.	
Q1.3		4	n.c.	
Q2.1		5	Q5.1	
O2.2		6	Q5.2	
02.3		7	05.3	
03.1		8	06.1	
03.2		9	06.2	
03.3		10	06.3	
Supply	Q1.1Q3.3 —	-11	Supply	Q5.1Q6.3
11.5		12	n.c.	
11.6		13	n.c.	
11.7		14	n.c.	
11.8		15	n.c.	
12.5		16	15.5	
12.6		17	15.6	
12.7		18	15.7	
12.8		19	15.8	
13.5		20	16.5	
13.6		21	16.6	
13.7		22	16.7	
13.8		23	16.8	
vlaauZ	1.5 3.8 ——	24	VlaguZ	15.516.8 -
0V		25	0V	

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measure. analyze. innovate.

Ordering key	Type 5413-2777/XE
Version	
16-bit 1	
Channel 1	
A+I passive 1	
A+I passive + active 2	
Channel 2	
0	
A+I passive 1	
A+I passive + active 2	
A passive (for F/T _{th}) 5	
Channel 3	
None 0	
A+I passive 1	
A+I passive + active 2	
A passive (for F/T _{th}) 5	
Channel 4	
None 0	
A+I passive 1	
A+I passive + active 2	
Channel 5	
None 0	
A+I passive 1	
A+I passive + active 2	
Channel 6	
<u>None</u> 0	
A+I passive 1	
A+I passive + active 2	
Digital inputs/outputs	
None 0	
Channel 1, or ultrasonic 1	
Channel 1 2 2	
Channel 1 3 3	
Channel 1 5 (without channel 4) 5	
Channel 1 6 (without channel 4) 6	
`·	
Vibration interface	
None 0	
Channel 4 4	

Note: A = analog, I = incremental

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