

Equipment of the Laboratory for Metrology, Measurement and Instrumentation (Labor für Messtechnik und Messsignalverarbeitung-LMM)

	Equipment	Manufacturer	Name / Technical Data	Remarks
1	Digital-Microscope	Keyence	VHX-500F	Camera with 2.11 Mpixel, max.: randisement 1000, 3D-presentation
2	UV-VIS_Spectrometer	GetSpec	GetSpec 2048-FT	200 – 1100 nm, spectral resolution <4,3 nm
3	UV-VIS_Spectrometer	Inno-Spec	CT75-CCD3082	200 – 1100 nm, spectral resolution <1,2 nm
4	IR-Spectrometer Fabry-Pero-Filter -3500 nm	InnoSpec		IR-source and FPI-Sensor 3,0 – 4,25 um
5	Ulbrichtkugel	GetSpec		
6	Spectralphotometer	Hach Lange	DR-5000	190-110 nm, resolution 0,1 nm, Extinction (+/-3A), Transmission, Concentration, round and rectangle cells
7	Turbidity meter	Hach Lange	2100P	
8	PH/Redox/conductance meter	Hach Lange	HQ40D	conductance 0,01 uS/cm bis 400 mS/cm
9	Hand-Tensiometer	Sita	DynoTester	Range 15 mN/m – 100 nM/m, live time of bubbles 15 – 15000ms
10	Pump circle for investigations of liquids			Content ca. 1 liter, Temperature controlled
11	Sieve analysis device	Fritsch	Analysette 3	
12	Thermal imaging camera	FLIR	T420 max1200 degree celsius	
13	System for vibration analysis	Brüel&Kjaer		
14	Experimental rack for strain gauges and temperature	Leybold		
15	Teaching package for sensors	Pepperl + Fuchs		
16	Function generators programmable	INSTEK	AFG-2112	
17	Arbitrary-Function generator	Tektronix	AFG 3101	1 GS/s 100 MHz
18	Arbitrary-Function generator, two channels	Tektronix	AFG 3022B	250 MS/s 25 Mhz, the two generators are usable together as a 3- channel system
19	Multimeter with Bluetooth-Adapter for data transfer to Smartphone or Tablet-PC	Agilent	U1272A	

20	10 Multimeter	Agilent		
21	Mixed Oscilloscope 100 Mhz, LAN	Agilent		
22	Frequency counter	HAMEG	HM 8123 3 GHz	
23	Pulse function generator	HAMEG		
24	(power-) network analyser	3-Kanal	Mavowatt 40	Clamp-on ammeter 1 10 A , Software DranView Pro
25	Clamp-on ammeter	Gossen	1-10 A	
26	Clamp-on ammeter	Metraflex	30, 300, 3000 A	
27	Graphtec Datalogger	Graphtec	GL820	
28	Portable Oscilloscope	Fluke	192C	
29	Oscilloscope (4-Kanal) 2Ps	Agilent	MSO-X 3014A	4 GS/s, 100 Mhz
30	Oscilloscope (4-Kanal) 2Ps	Tektronix	TDS 2014C	
31	Oscilloscope (2-Kanal) 5Ps	Tektronix		
32	LCR-measuring bridge	Fluke		
33	LCR-measuring bridge	GW-Instek	LCR-817	
34	Measurement amplifier	Peekel	PICAS	
35	Sweep generator	Agilent		
36	4 Power meter	Metrix	PX110	
37	Logig analyser	HP		
38	Voltage calibration source	KNICK	JS 3010	
39	Electronic workinmg places			
40	AVR32, ARDUINO, RaspBerry PI - environment			
41	LabView	National Instruments		Group licence
42	LabView FDS and application builder	National Instruments	GPIN-ENET/1000	
43	GPIB to Ethernet Adapter	National Instruments	GPIN-ENET/1000	
44	Test- und Simulation board	National Instruments	NI ELVIS II	
45	Test- und Simulation board	National Instruments	NI ELVIS II+	
46	Quanser Sensor Board	National Instruments		

47	USB-Data acquisition devices 6Ps	National Instruments	PXI-5105	60 MS/s, 8 Kanäle
48	Data acquisition cartridges of different kind for USB-Data acquisition devices (analog input and output, digital input and output, temperature and so on)	National Instruments, Keithley, Data Translation, Advantec		
49	Mathlab, Fuzzysoft	Fuzzytech		
50	Dataengine, Dataengine ADL, Data Engine VI	MIT Aachen		
51	Fast PXI – Module (60 MS/s)	National Instruments		
52	Flugmeßplatz bestehend aus: IMU (Trägheitsplattform) für: - Lagewinkel in alle Richtungen - Drehwinkel um alle Achsen - Drehraten um alle Achsen (+/- 400°/s) - Beschleunigungen (3D); +/- 10g - GPS – Position - Flughöhe (GPS-basiert)	iMAR		
53	Meßkopf an Tragflächenmast für: - Fluggeschwindigkeit (Differenzdruckmessung) - Flughöhe (barometrisch) - Anstellwinkel - Schiebewinkel - Temperatur (PT100)	Messwerk		
54	Different GPS-Systems	e.g. Garmin		
55	3 – D - Drucker	Ultimaker	Ultimaker Extendet+	