

MSS

Microstructure Profiler Family



Sea & Sun
Technology

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high quality, high accuracy probes for measuring microscale water stratification as well as the intensity of small scale turbulence in marine and limnic waters of up to 2000 m.

Sample rate: 1024 data sets/sec
Number of data channels: 16 / data set
Bandwidth of microstructure channel: 150 Hz (-3dB)
Response time of MS channels: < 11 ms
Resolution (all channels): 16 bit

Standard sensors:

- Pressure
- Temperature
- Microstructure Temperature (NTC)
- Conductivity
- Shear
- Acceleration

Possible additional sensors:

- Oxygen
- pH
- Redox (ORP)
- Turbidity
- Fluorescence

Other sensors on request.



For marine and limnic microstructure / turbulence measurements we offer 8 versions of our MSS profiler:

	MSS60	MSS90	MSS90L	MSS90LH	MSS90D	MSS90DH	MSS90DM	MSS90DMH
Max. depth (m)	500	500*	500*	500*	1000**	1000**	2000***	2000***
Body length (m)	0,8	1,0	1,25	1,25	1,25	1,25	1,25	1,25
Weight in air (kg)	6	9	15	28	16	30	17	31
Data link	RS-485	RS-485	RS-485	RS-485	RS-485	RS-485	RS-485 / Ethernet	RS-485 / Ethernet
Interface	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0

* optional for 1000 m depth available

** cable length up to 1000 m (1500m on request)

*** cable length up to 3000 m

Recommended applications:

MSS60: Light profiler for coastal waters, lakes and rivers

MSS90: Easy to handle profiler for ocean measurements from small ships

MSS90L: Our “work horse” for measurements down to 500 m (optional 1000 m)

MSS90LH: Heavy version of the MSS90L with lower profiler vibration level

MSS90D: Profiler for measurements down to 1000 m, cable length up to 1500 m

MSS90DH: Heavy version of the MSS90D with lower profiler vibration level

MSS90DM: Profiler for measurements down to 2000 m with memory, cable length up to 3000 m

MSS90DMH: Heavy version of the MSS90DM with lower profiler vibration level

Possible configuration:



Sensor equipment

The MSS90 profiler may be equipped with up to 9 different sensors on the bottom cap (MSS60: 5 sensors on the bottom cap).

- **Standard sensors:** P, T, C, 2 x Shear, NTC, ACC intern
- **Optional sensors:** Tilt (2axis), oxygen, turbidity, fluorescence, pH, Redox

Sensors	Principle	Range	Accuracy	Resolution	Response time
Microstructure Turbulence	PNS 06 airfoil shear probe	0 ... 6 1/s (dissip. rate 10^{-2} ... 10^{-11} W/kg)	not specified	approx. 10^{-3} 1/s	3 ms
Microstructure Temperature	FP07 micro-thermistor	-2 ... + 32 °C (other range on request)	± 0.01 °C	500µK (linear) 50µK (pre-emp. 10Hz) 5µK (pre-emp. 100Hz)	10 ms
Pressure	piezo-resistive	dependent on profiler	up to 0.05 % full scale	0.002 % full scale	150 ms
Precision Temperature	Pt 100 4 pole	-2 – 36 °C -2 – 60 °C	± 0.002 °C ± 0.005 °C	0.0005 °C 0.0009 °C	150 ms 150 ms
Precision Conductivity	7-pole cell	0 – 1 mS/cm 0 – 6 mS/cm 0 – 10 mS/cm 0 – 70 mS/cm (other range on request)	± 0.002 mS/cm	0.00002 mS/cm 0.0001mS/cm 0.0002mS/cm 0.001mS/cm	150 ms

Other sensors are available on request.

Cable and Winches:

Loosely tethered, free sinking turbulence profiler requires specially buoyant cable for undisturbed decent in the water. For the MSS profiler, two cables are available:

	Electrical wires	Diameter (mm)	Breaking Strength (kg)	Weight in air (g/m)	Weight in water (g/m)	Recommended for profiler
MSC4/190	4	4.7	190	24.4	7.0	MSS60, MSS90
MSC4/500	4	5.6	500	32.4	8.0	MSS90L, MSS90LH MSS90D, MSS90DH MSS90DM, MSS90DMH

To operate the MSS profilers, four electrical winches are available:

1. **SWM400.** Light winch for MSS60 and MSS90 operation in shallow water. Max. 400 m cable, Ø5mm
2. **SWM1000.** Standard winch for MSS90 and MSS90L operation. Max. 800 m cable, Ø5mm
3. **SWM2000.** Winch for MSS90L, MSS90LH, MSS90D, MSS90DH, MSS90DM, MSS90DMH. Max. 2000 m cable, Ø5mm
4. **DWM3000.** Heavy winch for comfortable operation of all MSS profiler from slowly moving vessel (up to 3 knots). Max. 3000 m cable, Ø 5mm



Modified versions of the winches for microstructure profiler are available on request.

Interface and power supply

The interface unit provides power supply for the profiler and transmits the data from the profiler via USB to a Laptop for on-line display and storage. There are two different interfaces available:

- Interface with RS485 data link to profiler (for MSS60, MSS90, MSS90L, MSS90LH).

Max. cable length: 1000m

- Bi-directional interface with optional data storage in the MSS profiler and low speed on-line data transmission

(for MSS90D, MSS90DH, MSS90DM, MSS90DMH).

Max. cable length: 3000m



Software

Data acquisition software

For the data acquisition, the software package SDA (Standard Data Acquisition program) is delivered with the profiler. SDA is running under all WINDOWS. It displays the received data online and stores it on hard disk. Graphic functions allow convenient operation and online control of the system. Conversion of the stored data files to ASCII is included.

Data processing software

For the offline data processing we offer the program MSSpro. It has the character of a toolbox. MSSpro consists of a management program and many modules to carry out various steps of data evaluation, including data validation, computation of standard hydrographic parameter, and computation of all relevant turbulence parameters.

Your shipment:

Weight rings,
ring with fringe
or brushes



Configuration
cable



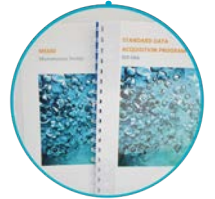
Hexagon keys



Screws



Instruction manual,
calibrations documents



MSS probe,
protection cage



Software and
documents



Plastic bottle
for sensor cleaning



Sensor
Dummy Plug



Silicone grease



O-ring-set



Spare
RS-485 driver

