

**Name:** SOP for vessel:maria\_s\_merian:rsws\_msm:sbe\_38\_0690 (7421)

**Version:**

**Valid from:**

**Status:** This is a **public version**. Certain sensitive information, such as server names, addresses, and exact paths and storage locations that is not meant for others than AWI associates was removed in that document.

### Changelog:

1. 2022-10-06

- initial publication

## 1. Contacts/Responsible Persons

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## 2. Purpose & Scope

**Description:** This SOP describes device configuration, parameter characteristics, transmission and processing of its output, ingest procedure, storage, data access possibilities, and publishing. Intended user groups are device owners, technicians, and data managers.

**Comment:** This item is managed and processed by the Deutsche Allianz Meeresforschung (German Marine Research Alliance), please see [www.allianz-meeresforschung.de](http://www.allianz-meeresforschung.de) for further information.

## 3. Item Description

**Short Name:** SBE\_38\_0690

**Long Name:** SBE 38 Digital oceanographic thermometer

**URN:** vessel:maria\_s\_merian:rsws\_msm:sbe\_38\_0690

**ID:** 7421

**UUID:** 8efa9eb7-9ea6-4f5c-bcb7-d968c428802b

**Description:** Thermometer with housing for depths up to 10500 m. Used as remote temperature sensor for the SBE 45 Thermosalinograph.

**Serial No.:** 0690

**Manufacturer:** Sea-Bird Scientific

**PID/Handle:** <https://hdl.handle.net/10013/sensor.f3bb54e9-e7b5-4d72-b14e-618ee8f7ba6a>

#### 4. Parameter Description

**Short Name:** temperature

**Long Name:** water temperature

45 **full URN:** vessel:maria\_s\_merian:rsws\_msm:sbe\_38\_0690:temperature

**ID:** 87687

**UUID:** 9a5fc49e-a6c8-48be-9ebb-7ae57b402ac5

**Type:** water temperature

**Unit:** °C

50 **Comment:**

**Measurement Properties:** none

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**Short Name:** status

**Long Name:** status

55 **full URN:** vessel:maria\_s\_merian:rsws\_msm:sbe\_38\_0690:status

**ID:** 87688

**UUID:** 3f5e4371-a162-477d-bf2a-5cdb5e6b592

**Type:** text

**Unit:** none

60 **Comment:**

**Measurement Properties:** none

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#### 5. Processing

65 The thermosalinograph measures temperature and electrical conductivity of sea water. Using those two properties salinity (and additionally sound velocity) are estimated (Sea-Bird Electronics [2020b](#)). Usually, an additional temperature sensor SBE38 (Sea-Bird Electronics [2020a](#)) is related to the SBE45. All data are stored through the data management system DAVIS-SHIP (DSHIP). After the cruise all data are transferred to the DSHIP land system. From there data are obtained for further evaluation.

##### 70 5.1. Acquisition

The SBE45 is installed within the Reinseewasseranlage (RSWS) in the Lotgeräteraum (Bergmann et al. [2021](#)). The RSWS is directly flushed with sea water through the two deep inlets in about 6.5m depth. At the two inlets the two additional SBE38 temperature sensors are installed.

##### **Auxiliary Files:**

75 **Name:** *"Maria S. Merian" research vessel manual*

**Type:** Manual

**Description:** General overview on the research vessel Maria S. Merian with detailed information on onboard scientific devices

80 **URL:** <https://www.ldf.uni-hamburg.de/en/merian/technisches/dokumente-tech-merian/handbuch-merian-eng.pdf>

**Last Modification:** Jan. 2021

**Name:** *SBE45 MicroTSG Thermosalinograph*

**Type:** Manual

85 **Description:** User manual of SBE45 MicroTSG Thermosalinograph  
**URL:** <https://www.seabird.com/asset-get.download.jsa?id=54627862504>  
**Last Modification:** 2020

**Name:** *SBE38 Digital Oceanographic Thermometer*

90 **Type:** Manual  
**Description:** User manual of SBE38 Digital Oceanographic Thermometer  
**URL:** <https://www.seabird.com/asset-get.download.jsa?id=54627862501>  
**Last Modification:** 2020

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## 5.2. Extraction

Data are extracted from the DSHIP land system at BSH (dship.bsh.de). The data are stored per cruise and extracted likewise. Together with accompanying system parameters like latitude, longitude, ships speed, and flow rate through the system, all relevant SBE45 parameters are extracted in one-second resolution. Output of the extraction is the usual DSHIP export, consisting of a folder with three files, (1) a \*.dat ASCII-data file, (2) a \*.xml order-file and (3) a \*.sys log-file.

**Auxiliary Files:** none

## 5.3. Conversion

105 The aforementioned DSHIP-Export is processed with Python with the following steps: (1) parsing of the data file with the output of a Geodataframe using the time as index, (2) checking for dummy-values, (3) comparison of position data against Mastertrack, (4) checking whether position data are in an EEZ, (5) averaging into one-minute means, (6) several quality tests (global range test, spike test, gradient test, test of adjacent values, flow speed test), and (if applicable) (7) calibration of temperature and salinity data with independent data (direct samples or CTD data from inlet depth).

**Software:** -

**Network Share Name:** - ← *public version, input cropped*

**Filename Convention:** -

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115 **Auxiliary Files:**

**Name:** -

**Type:** -

**Description:** -

**URL:** -

120 **Last Modification:** -

## 6. Ingest

Ingest is part of the O2A process chain (Koppe et al. 2015, Gerchow et al. 2017) and is the starting point to collect, store, and redistribute data and metadata.

There is no automated data transfer available for this workflow. All data must be retrieved manually from BSH.

**Protocol:** MDM

**Project path:** *public version, input removed*

**Campaign Data:** yes

130 **Filename Convention:** per campaign

**Expected Data Interval:** per campaign

**Ingest Data Interval:** per campaign

**Mapping:** -

**Save Directory:** -

135 **json/xml:**

**Script:** -

**Script call:**

**Repository:** -

## 140 7. Storage

### 7.1. Raw Data

**Location** *public version, input cropped*

**Backup Policy:** -

### 145 7.2. Near Real-Time Data

**Info:** -

**Service:** none

### 7.3. Publications and further Reading

150 **Publication:** Hölz et al. 2022, Wöfl and Schlundt 2020, Schneider von Deimling and Schlundt 2022, Römer and Schlundt 2021, Krastel and Schlundt 2022, Schoening and Schlundt 2021, Ehrhardt and Schlundt 2022a, Schmidt and Schlundt 2021, Ehrhardt and Schlundt 2022b, Becker and Schlundt 2021, Hainbucher and Schlundt 2021, Zonneveld and Schlundt 2022, Devey and Schlundt 2021

155 **Further Reading:** This device and workflow is part of DAM, please check <https://www.allianz-meeresforschung.de/> for further information.

## References

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160 Bergmann, K., M. Magguilli, R. Schmidt, and E. Reize (Jan. 2021). "*Maria S. Merian*" research vessel manual. en. URL: <https://www.lfd.uni-hamburg.de/en/merian/technisches/dokumente-tech-merian/handbuch-merian-eng.pdf> (visited on 07/01/2022).

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