

# Magnetometer System (Magnetics)

**Attention:**

Please note that the Magnetometer System can only be operated upon request. Request operations with the Magnetometer System to AWI-Logistics in sufficient time prior to the cruise.

## Summary

Magnetometers are used to measure the earth magnetic field. The magnetometer on board of Polarstern is a vector magnetometer that measures the vector components of the magnetic field. It consists of an upper and a lower sensor.

|               |                                 |
|---------------|---------------------------------|
| Manufacturer  | MAGSON GmbH                     |
| Model         | MFG-2S                          |
| Serial No.    | n/a                             |
| Type          | magnetometer                    |
| REGISTRY-Link | <a href="#">REGISTRY (1407)</a> |



## Contacts

| Name                                                   | Institution                                                              | Role                                   |
|--------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------------|
| Thorsten Eggers                                        | Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research | Engineer In Charge                     |
| Alfred Wegener Institute for Polar and Marine Research | Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research | Owner                                  |
| Graeme Eagles                                          | Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research | Principal Investigator, Data Scientist |

## Components

### Subdevices

| Name              | Model  | Serial Number | REGISTRY-Link                   |
|-------------------|--------|---------------|---------------------------------|
| Magnetometer down | MFG-2S | 2000.03       | <a href="#">REGISTRY (1436)</a> |
| Magnetometer up   | MFG-2S | 2000.02       | <a href="#">REGISTRY (1435)</a> |

## Position

|             |                                                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Info</b> | xyz-position calculated from Alignment Survey Report (2016), located on mast platform                                                       |
| <b>X</b>    | 62.76 m<br>(X-0 is at the center of der rudder (ref. design drawing of the vessel), positive X-axis is forward and along vessel centerline) |
| <b>Y</b>    | -0.067 m<br>(Y-0 at centerline, positive Y-axis is portside)                                                                                |
| <b>Z</b>    | 38.323 m<br>(Z-0 is set to the lowest point of the keel, positive Z-axis is upwards)                                                        |

## Data logging, storage and archiving

### Logged parameters

| Parameter                                       | O2ARegistry Output Type | Unit |
|-------------------------------------------------|-------------------------|------|
| electronics temperature port                    | temperature             | °C   |
| electronics temperature starbord                | temperature             | °C   |
| geomagnetic total field intensity portside      | magnetic field          | nT   |
| geomagnetic total field intensity starbord side | magnetic field          | nT   |
| sensor temperature portside                     | temperature             | °C   |
| sensor temperature starbord side                | temperature             | °C   |
| geomagnetic x-component starbord side           | magnetic field          | nT   |
| geomagnetic x-component port side               | magnetic field          | nT   |
| geomagnetic y-component starbord side           | magnetic field          | nT   |
| geomagnetic y-component port side               | magnetic field          | nT   |
| geomagnetic z-component starbord side           | magnetic field          | nT   |
| geomagnetic z-component port side               | magnetic field          | nT   |
| gyro heading                                    | attitude                | deg  |
| gyro pitch                                      | attitude                | deg  |
| gyro roll                                       | attitude                | deg  |

### Central geographical ship's position and time standard

### Rawdata storage on board

### Dship

### Data archiving on land

## Documentation

- König, M. (2006): Processing of shipborne magnetometer data and revision of the timing and geometry of the Mesozoic break-up of Gondwana = Auswertung schiffsfester Magnetometerdaten und die Neubestimmung des Zeitpunktes und der Geometrie des Mesozoischen Aufbruchs von Gondwana , Berichte zur Polar- und Meeresforschung (Reports on Polar and Marine Research), Bremerhaven, Alfred Wegener Institute for Polar and Marine Research, 525 , 137 p. .