FOERSTER

3-AXIS-MAGNETOMETER

proof.

FEATURES

- Fluxgate magnetometers as sensing elements.

- The sensor arrangement is designed in a way, that the determination of the magnetic flux density refers to one reference point for all three axis.

- Magnetometers with digital interface (RS 232 or CAN) for direct connection to a PC.

- A miniaturized sensor with analogue interface for connection to a PC via a separate sensor electronics.

- Measuring DC magnetic fields and AC magnetic fields up to 1 kHz with a measuring range of 100 µT.

- MAGNETOMAT application software for setting parameters, real-time result display, data sampling and report generation.

- Single or continuous long term measurements.

- Power supply by means of mains adapter or battery pack.

MEASUREMENT METHOD

- Determination of the magnetic flux density as absolute value in three axis.

- The magnetometer can be calibrated traceable to national standards (PTB).

- In case of measuring with more than one 3-axis-magnetometer, gradients can be determined and displayed by means of the application software.

APPLICATIONS

- Long term monitoring and recording of the earth magnetic field.

- Long term monitoring of magnetic environmental conditions, e.g. prior to installation of magnetic sensitive devices like MRI systems

- Setup of magnetometer networks for determination of complex 3-dimensional magnetic fields.

- Detection of magnetic signatures of naval vessels or integrated components as part of the degaussing procedure.

- Detection of anomalies of the earth magnetic field, caused by unexploded ordnance or waste deposits.

COMPONENTS

To complete a measuring kit, the following components are necessary:

- 3-Axis-Magnetometer / Sensor with digital / analogue interface
- Sensor electronics (magnetometer electronics, sensor power supply and ADC) to connect 3-Axis-Sensor with analogue interface
- Power supply (Mains adapter or battery pack)
- PC
- Application software

3-AXIS-MAGNETOMETER, BASIC, RS 232

- 3-Axis-Magnetometer with integrated electronics and digital interface RS 232
- Compact, rugged design, water proof

3-AXIS-MAGNETOMETER, STANDARD, RS 232

- 3-Axis-Magnetometer with integrated electronics and digital interface RS 232
- Interface can be reconfigured to CAN
- Compact, rugged design, water proof

3-AXIS-MAGNETOMETER, STANDARD, CAN

- 3-Axis-Magnetometer with integrated electronics and digital interface CAN
- Interface can be reconfigured to RS 232
- Compact, rugged design, water proof

3-AXIS-SENSOR, MINIATURIZED

- Miniaturized 3-axis sensor with analogue interface for connection to Sensor Electronics
- 3 meter sensor cable
- Compact, rugged design, water proof

## MAGNETOMAT® 1.782 SENSOR ELECTRONICS (DESKTOP TYPE)

- Electronics including RS 232 PC interface

- Port 3-A to link 3-axis sensor miniaturized

- Ports S1 and S2 to link 1-axis probes, MAGNETOMAT-type
  (see Product Information MAGNETOMAT 1.782)

- Power supply 12 – 24 VDC

- Socket „TRIG" as trigger input (connector supplied)

MAGNETOMAT® STANDARD-SOFTWARE

Application software for multi channel magnetic data acquisition (XYZ-Axis) with high sampling rates. Suitable for measurement setup with one or two 3-Axis-Magnetometers and RS 232 interface.
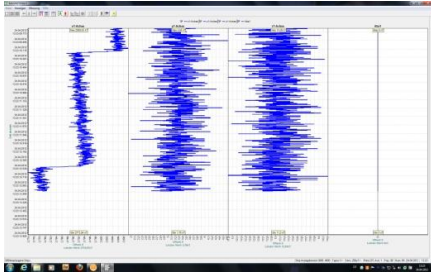
- Real time data display
- Display of absolute and differential values
- Data storage and administration
- Adjustable sampling rate
- Zoom function for data display
- Low pass filter
- Single value selection
- Storage and export of selected values as .csv and.txt file

MAGNETOMAT® NETWORK-SOFTWARE

Application software for multi channel magnetic data acquisition (XYZ-Axis) with high sampling rates, for a CAN-Bus network with up to 32 3-Axis-Magnetometers.
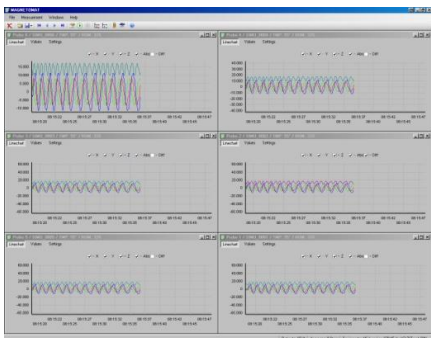
- Various options for screen setup and real time data display of selected channels
- Display of absolute and differential values
- Data storage and administration
- Adjustable sampling rate
- Zoom function for data display
- Low pass filter
- Single value selection
- Storage and export of selected values as .csv and.txt file

Transfer rate, number of integrated magnetometers and network cable length depend on each other.
The following table provides a summary of possible configurations.

Network cable length [m]	Transfer rate [kBits/s]	Quantity 3-Axis-Magnetometers	Sampling rate [1/s]
500	125	1	237
		3	120
		5	60
		10	30
		20	15
250	250	1	460
		3	237
		5	120
		10	60
		20	30
		max. 32	7,5
100	500	1	460
		3	237
		5	237
		10	120
		20	60
		max. 32	15

MAGNETOMAT® CLIENT-SOFTWARE

Application software for data display on a monitor when manually testing components for their magnetic remanence (absolute value) with one 3-Axis-Magnetometer; optionally display of measured value or measured value combined with strip chart.
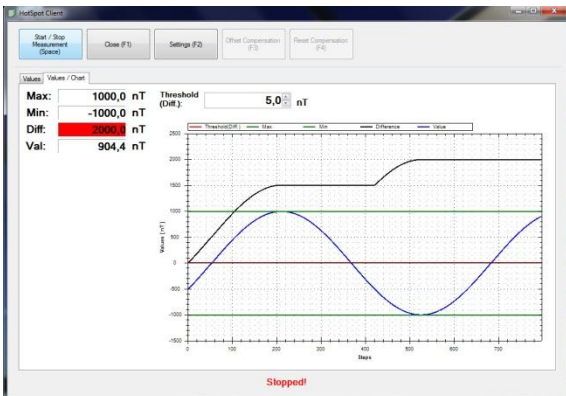

- Display of maximum and minimum peak values

- Display of peak value difference

- Indication of exceeding thresholds

- Display of measuring value in real time

- Data storage and administration

- Adjustable sampling rate

- Low pass filter

- Datalogging and storage of measured values in a text file in tabular form
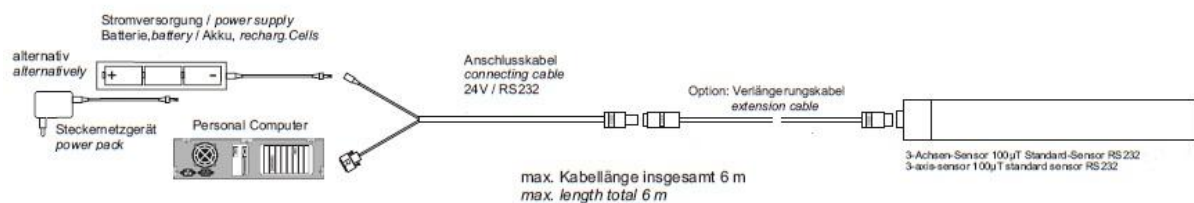
MEASUREMENT SETUP

A complete measurement setup consists of:

- 3-Axis-Magnetometer with digital interface or
  3-Axis-Sensor with analogue interface

- Sensor electronics (magnetometer electronics and ADC)
  for operation of a 3-Axis-Sensor with analogue interface

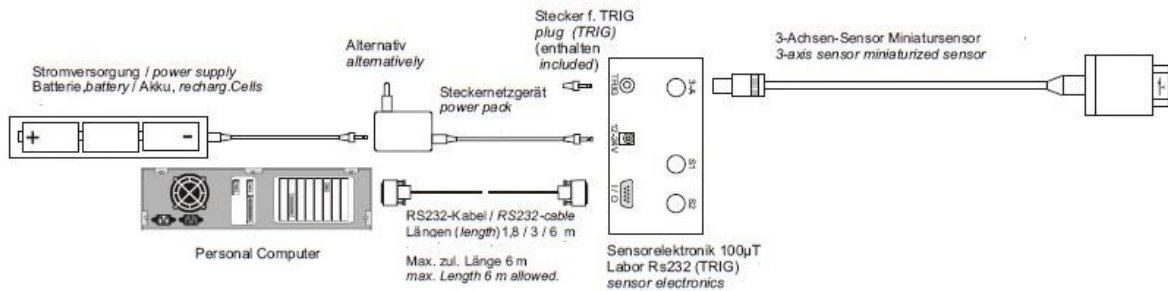- Power supply (Mains adapter or battery pack)

- PC

- Application software
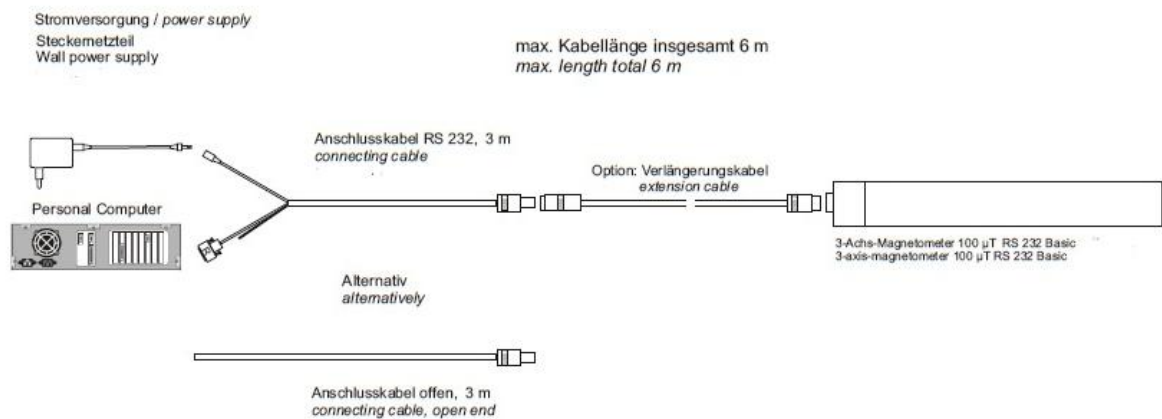
Pict. 1 Measurement setup: One 3-Axis-Magnetometer Basic, RS 232

Pict. 2 Measurement setup: One 3-Axis-Magnetometer Standard, RS 232
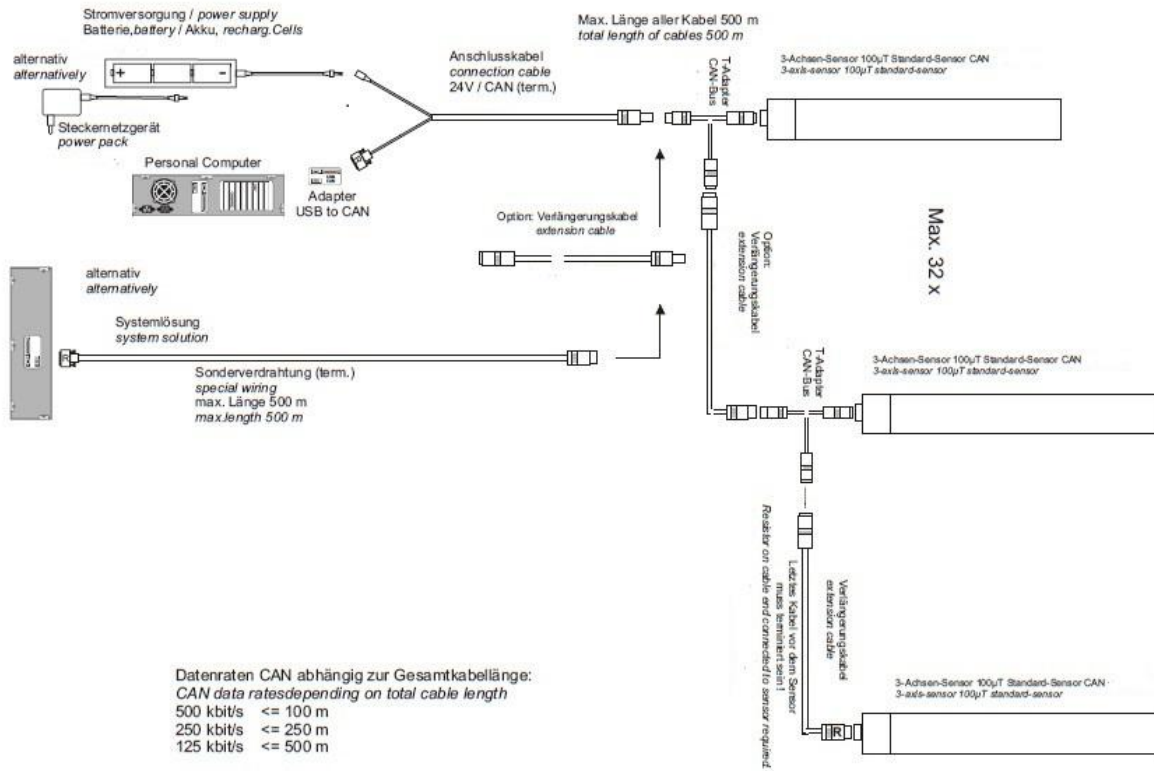
Pict. 3 Measurement setup : Three 3-Axis-Magnetometers Standard, CAN
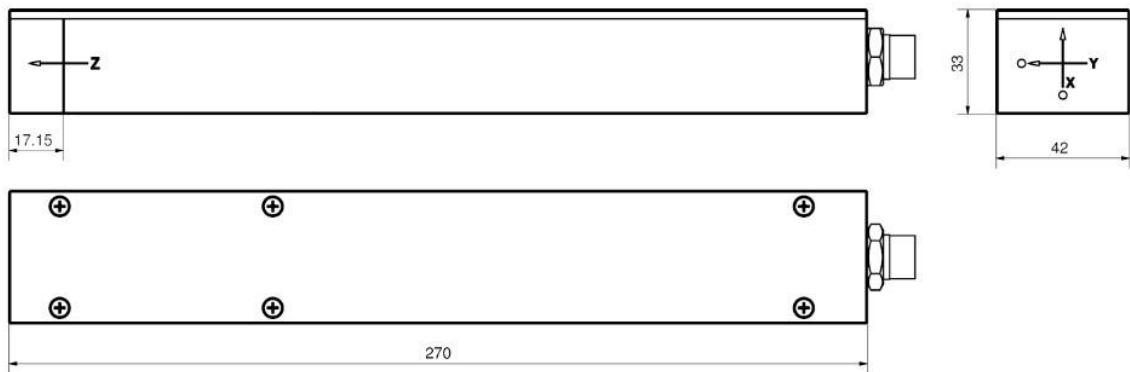

Pict. 4 Measurement setup: One 3-Axis-Sensor Miniaturized incl. sensor electronics 100 µT
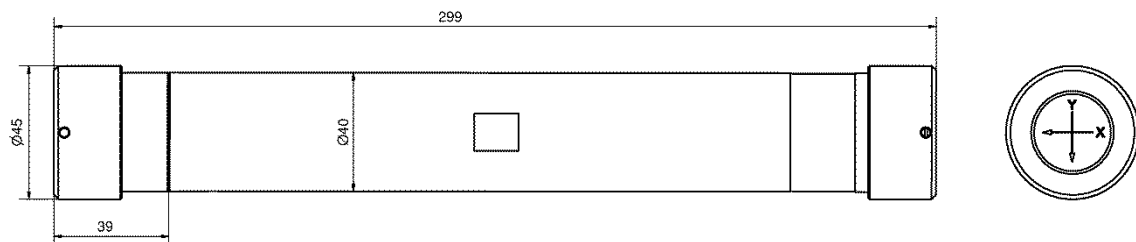
TECHNICAL SPECIFICATION

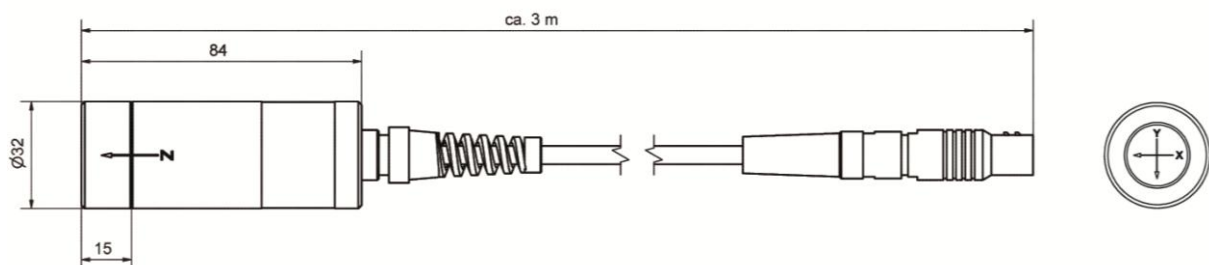## 3-AXIS-MAGNETOMETER BASIC AND STANDARD, 3-AXIS-SENSOR MINIATURIZED

Basic

Standard, RS 232 / CAN

3-Axis-Sensor Miniaturized

Measuring range	100 µT
Resolution	24 Bit ADC
Limiting frequency	1 kHz
Noise	≤ 35 pT/√Hz@1Hz
Temperature drift (@ 50µT)	≤ +/- 1 nT/°C
Measurement uncertainty, calibrated sensor	+/- 0.5%
Orthogonality of sensor axis	≤ 0.2°
Alignment of sensor axis and housing	≤ 0.25°
Maximum power consumption	3.6 W
Stabilization time after switching on	≤ 30 min
Ambient temperature	-25 - +50 °C
Protection grade	IP 68 - Basic IP 66
Weight 3-Axis-Magnetometer Basic 3-Axis-Magnetometer RS 232 / CAN 3-Axis-Sensor Miniaturized	 0.4 kg 0.6 kg 0.2 kg

All values for 3-Axis-Magnetometer or 3-Axis-Magnetometer Miniaturized connected to Sensor Electronic

SENSOR ELECTRONICS

Power supply	12 – 24 VDC
PC-Interface	RS 232
Trigger input	5 V TTL/CMOS level trigger on falling edge trigger pulse width = 2/sampling rate
Dimension (LxWxH)	130x187x100 mm
Weight	Approx. 0.5 kg

POWER SUPPLY

Mains adapter Basic or Standard	24 VDC, 1 A, 90 – 264 VAC
Battery pack, rechargeable and charger	NiMH 12 VDC, 3,3 Ah

CABLES

Connecting cable - 3-Axis-Magnetometer Basic - 3-Axis-Magnetometer Standard RS 232 - 3-Axis-Magnetometer Standard CAN	each: 3m long PC-connector (D-sub 9-p) Power supply socket
Connecting cable, sensor electronics, RS 232	1,8 / 3 m long
Extension cables - 3-Axis-Magnetometer Standard RS232/CAN - 3-Axis-Magnetometer Standard CAN - 3-Axis-Sensor Miniaturized	3 / 10 / 15 / 25 m long 3 / 10 / 15 / 25 m long, terminated 3 m long
T-adapter cable, CAN network	Each cable connection 120 mm long

ACCESSORIES

CAN PC interface	CAN express card incl. transceiver
Termination resistor for CAN network	CAN term 120

SOFTWARE

PC requirements for all applications	32 / 64 bit OS Windows XP SP3 Windows 7 or higher MAGNETOMAT Network Win 7 (32 bit)

IMPRINT

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