

Title: RML-MAG Space Magnetometer Datasheet

Company: REMRED Space Technologies Ltd.

Department: Business Development | MB |

Contact: W: remred.space

Issue: 01_00

Ref. PRO2021-RR-PQA-DS-2002

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PRODUCT DATASHEET

RML-MAG – Space Magnetometer

1st generation

PROJECT TITLE

PROJECT REF. PRO2021

PREPARED BY REMRED Space Technologies Ltd.

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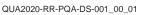
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 Released

TYPE Product Datasheet, Non-Confidential

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CUSTOMER(S) CONTRACT REF. CUSTOMER ID. -

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APROVAL

Issue	Date -	Signatures		
		Author(s)	Reviewed by	Approved by
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REMRED archives		1

CHANGE LOG

Reference	Date	Issue	Revision
PRO2021-RR-PQA-DS-2002	01/11/2021	01_00	1

CHANGE RECORD

Issue: 01_00	Revision: 1		
Reason for change	Date	Page	Paragraph(s)
N/A (initial release).	01/11/2021	All	All







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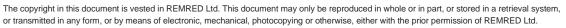
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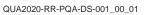
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1 Purpose and Scope

The present document provides detailed technical information about RML-MAG Space Magnetometer.

The definitions and glossary of terms from ECSS-S-ST-00-01C [AD 1] apply to this document.



1. Figure – RML-MAG Space Magnetometer (1st generation)







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2 Application and Key Features

2.1 APPLICATION

- Magnetic Field and Space Weather Research & Forecast (Service)
 - Space Magnetic Field related research and service provision
 - Research
 - Service data production
 - Forecast
 - Data models validation
 - Measuring space weather related space magnetic field data products as defined by the European Space Agency (ESA)
 - Vector components
 - Field strength
 - Measuring long-term behaviour

2.2 KEY FEATURES

- Space magnetic field and space weather research and forecast
 - Cost and time effective monitoring solution for constellations
 - Extremely low budgets with relatively high performance
- High performance measurement specification
 - Utilising internally located miniaturised fluxgate sensor
 - SpaceMag-Lite provided by Bartington Ltd.
 - Specification following the data product definitions of ESA
- Possibility for optional extension with additional external sensors
 - Capable to operate up to 2 external magentic feidl sensors
- Fully autonomous operation
- Controlled via TM/TC
- ✓ Available interfaces: CAN, M-LVDS, RS-422





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3 Specification

3.1 GENERAL SPECIFICATION

1. Table – General specification

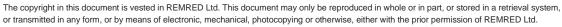
Parameters	Values
Power	1.5 W
Mass	0.6 kg
Dimensions (H,W,L)	49 mm, 100 mm, 110 mm
Operational temperature range	-40°C+65°C
Non-operational temperature range	-40°C+85°C
Operational pressure range	10 ⁵ Pa…10 ⁻⁴ Pa
Outgassing rate	<1% TML <0.1% CVCM
Data range	15 MB/day
Handling environment humidity	2065% relH

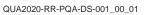
3.2 ENVIRONMENTAL SPECIFICATION

2. Table - Environmental specification

Parameters		Values
	Temperature environment	-40°C+85°C
Thermal vacuum	Vacuum environment	<10 ⁻³ Pa
	Max. depressurization rate	5.0 kPa/s
	Sine vibration environment for 3-axis	20100 Hz, 16.0 g
Vibration	Random vibration environment for 3-axis	52000Hz, 17.0g ^{RMS}
	Shock pulse for 3 axis	100 g, 0.25 ms
EMC	EMC environment	Tailored ECSS-E-ST-20-07C
EIVIC	EMC environment	Rev.1 [AD 2]
Radiation	Used components	COTS
Naulation	Proven lifetime	Demonstration is planned at LEO













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3.3 INTERFACES

3. Table - Interfaces

Parameters	Values
Input power bus	5V regulated (±5%) 12V unregulated (9.0 V…20.0 V)
TM/TC interface	CAN Bus / M-LVDS / RS-422/485/232

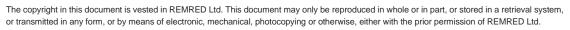
3.4 MEASUREMENT CAPABILITIES

4. Table - Measurement capabilities

Parameters
3-axis fluxgate
Bartington Ltd. / SpaceMag-Lite
± 60μT
10 to ≤150pTrms/√Hz at 1Hz
<0.5°



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4 Flight Heritage

5. Table - Flight heritage

Mission name	Hosting platform	Orbit details	Duration	Remarks
Under selection	SmallSat	LEO	7+ years	planned









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5 List of Abbreviations

AD Applicable Documents
Astorika Astorika Sp. z.o.o.

COTS Commercial Off-The-Shelf

ECSS European Cooperation for Space Standardization

ESA European Space Agency
ICL Imperial College London

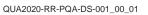
LEO Low Earth Orbit

LET Linear Energy Transfer RD Reference Documents

TC Telecommand
TID Total Ionising Dose

TM Telemetry









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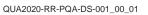
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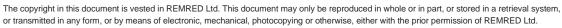
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8 References

8.1 APPLICABLE AND NORMATIVE DOCUMENTS

6. Table – Applicable and Normative Documents

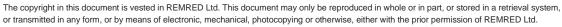
AD	Title	Reference	Version
[AD 1]	ECSS system - Glossary of terms	ECSS-S-ST-00-01C	1 Oct 2012
[AD 2]	Space engineering – Electromagnetic compatibility	ECSS-E-ST-20-07C Rev.1	7 Feb 2012

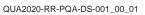
8.2 REFERENCE DOCUMENTS

7. Table - Reference Documents

RD	Title	Reference	Version
[RD 1]	-	-	-











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