WIKON
data logistics

AIRMO-1500

INSTRUCTION MANUAL

Remote Data Transmission Module

EN

Get in Touch

1 Content

2 General

- The AIRMO-1500 described in this operating manual was designed and manufactured according to the current state of the art. All components are subject to strict quality and environmental criteria during production.
- This operating manual provides important information on how to use the device. The prerequisite for safe working environment follows all specified safety instructions and handling.
- The local accident prevention regulations and general safety regulations applicable to the area of use of the equipment must be complied with.
- The operating instructions are part of the product and must be kept in the immediate vicinity of the device for specialized personnel to always access. The operating instructions must be passed on to subsequent users or owners of the device.
- The specialized staff must have read and understood the operating instructions carefully before starting all work.
- The general terms and conditions in the sales documents apply. Technical Changes are reserved.
- To use the online functionality of the AIRMO-1500, a valid service contract must be available.
- Further Information:

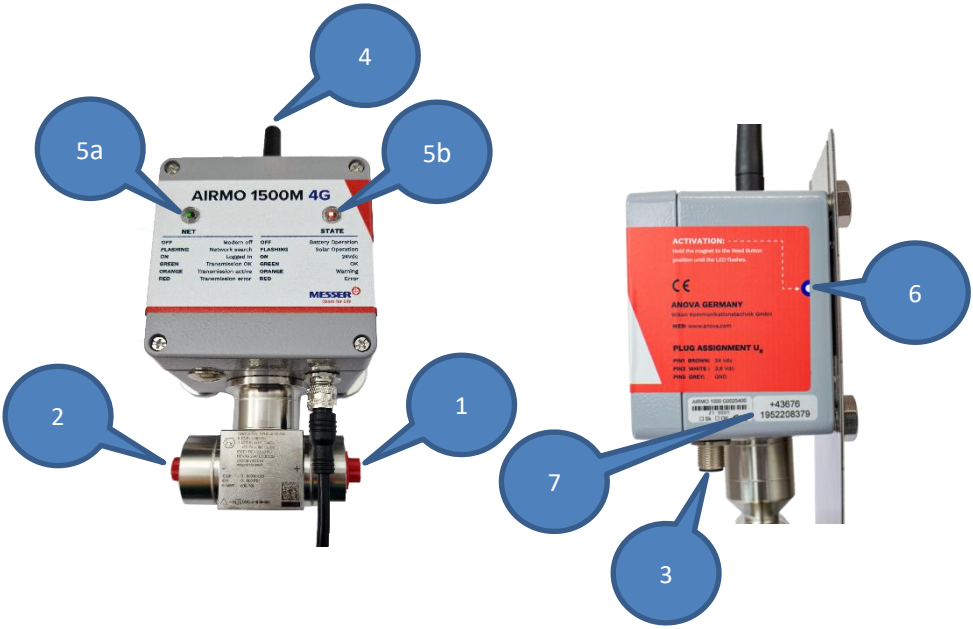
Internet address:	http://www.anova.com
Online DataCenter:	https://www.global-datacenter.de
Online Help:	https://airmo1k.anova.com
Application Advisor:	Tel.: +49 631 2057 770
	Mail: info-eu@anova.com

2.1 Abbreviations, definitions

GPRS General Packet Radio Service
SMS Short Message Service

3 Structure and function

3.1 Overview



1	Pressure port for lower tank pressure
2	Pressure port for upper tank pressure
3	Connection for power supply
4	Antenna
5a	LED for modem status
5b	Device status LED
6	Position of the reed contact
7	Serial number & MSISDN of the Device

3.2 Description

The AIRMO-1500 has an integrated differential and absolute pressure sensor. By measuring the pressure difference between the lower and upper connections of the tank, the level can be determined. The microcontroller in the AIRMO-1500 controls the measurement, evaluation and data transmission to the data center (server).
The differential pressure (0…1500mbar) is transmitted in the first and the absolute pressure (0..40bar) in the second input channel.
The AIRMO-1500 has an integrated LTE modem and transmits the data packets either via GPRS or sends SMS messages. The data center receives the data packets and offers extensive and individual data preparation options.
The AIRMO is powered by an external 24Vdc supply.
Information on the connector assignment and the energy supply can be found in the chapter "Technical data".

3.3 Scope of delivery

3.3.1 AIRMO-1500

The AIRMO-1500 is delivered fully assembled. The AIRMO includes the differential pressure sensor, absolute pressure sensor, control electronics, modem, antenna and an integrated SIM card.
For commissioning, the device is mounted on the tank, the two pressure connections are connected and finally the 24V power supply is established.

3.3.2 Mounting

The mounting kit contains all the necessary parts for mounting on the tank and making the two pressure connections.

4 Safety

4.1 Explanation of Symbols

WARNING!
... indicates a potentially dangerous situation that could lead to death or serious injury if not avoided.

CAUTION!
... indicates a potentially dangerous situation that may result in minor or minor injury or damage to property and the environment if not avoided.

Information
... highlights useful tips and recommendations as well as information for efficient and trouble-free operation.

4.2 Intended use

The AIRMO-1500 comes with an integrated differential and absolute pressure sensor and modem. Opening the housing is not necessary and is not permitted.
This device is not approved for use in hazardous areas!
The AIRMO-1500 is designed and constructed exclusively for the intended use described herein and may only be used in accordance with it.
The technical specifications in this operating manual must be observed. Improper handling or operation of the device outside the technical specifications requires immediate decommissioning and inspection by an authorized service employee.
The device must be handled with the necessary care (protect against moisture, shocks, strong magnetic fields, static electricity and extreme temperatures, do not insert objects into the device or openings).
Plugs and sockets must be protected from dirt.
Claims of any kind due to improper use are excluded.

4.3 Misuse

WARNING!
Injuries due to misuse
Misuse of the device can lead to dangerous situations and injuries.

- Unauthorized modifications to the device are to be refrained from.
- Do not use the device in hazardous areas.

Any use that goes beyond the intended use or is otherwise considered misuse.

Do not use this device in security or emergency stop facilities.

4.4 Personnel qualification

WARNING!
Risk of injury in the event of insufficient qualifications
Improper handling can lead to considerable personal injury and property damage.

- The activities described in these operating instructions should only be carried out by qualified personnel with the following qualifications.

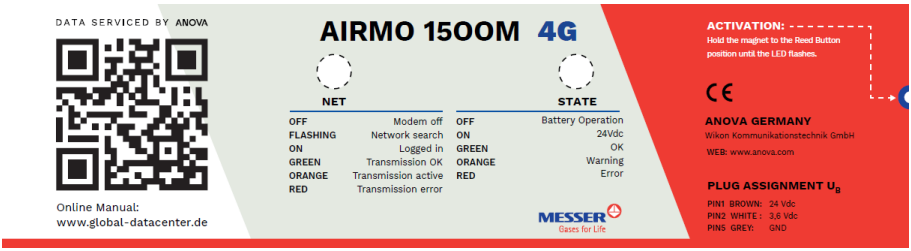
Professionals
The specialized personnel authorized by the operator are able to carry out the described work and independently identify possible hazards due to their professional training, knowledge of measurement and control technology and their experience, as well as knowledge of country-specific regulations, applicable standards and guidelines.

4.5 Radiation exposure

CAUTION!
Radiation exposure

When data transmission is activated, a safety distance of >10 cm from the antenna must be maintained.

4.6 Signage, safety signage



The operator is obliged to keep the signage legible.

4.7 Symbols

Before installing and commissioning the device, be sure to read the operating instructions!

Devices with this marking comply with the applicable European directives.

In the case of appliances with this labelling, it is pointed out that they must not be disposed of in the household waste. Disposal is carried out by take-back or by appropriate municipal authorities (see EU Directive 2012/19/EU).

5 Transport and storage

5.1 Transport

Inspect the AIRMO-1500 for any damage during transport. Report obvious damage immediately.

CAUTION!
Damage caused by improper transport
Improper transport can result in considerable property damage.

- Proceed carefully when unloading the packages on delivery and internal transport and observe the symbols on the packaging.
- In the case of internal transport, follow the instructions under chapter "Packaging and storage".

5.2 Packaging and storage

Do not remove the packaging until immediately before assembly.
Keep the packaging, as it offers optimal protection during transport (e.g. hanging installation location, repair shipment).
Permissible conditions at the storage location:
Storage temperature: -40 ... +70 °C

6 Commissioning

Personnel: The assembly of the device and the production of the pressure connections must be carried out by qualified trained specialists.
The electrical installation must be carried out by qualified electricians.

Tools:
Socket wrench SW 13 (M8) for mounting the retaining plates on the Samson sensor block
Socket / open-end wrench SW 17 (M10) for mounting the AIRMO-1500 on the retaining panel

Note the tightening torques of the screws in the sketches.
Only use original parts (see chapter "Accessories").

6.1 Assembly

6.1.1 Mounting

Material Mounting Kit
1x Set (2x Male Tube Connector 6mm x Male NPT 1/4")

6.1.2 Mounting on the tank

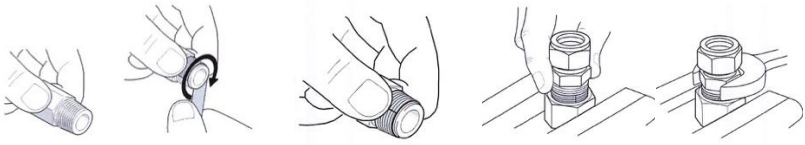
- Attach AIRMO-1500 with 4 Magnets on tank or a plate.

6.1.3 Making the pressure connections

a.) Mounting LET-LOK fittings on the differential pressure sensor and valve block

LET-LOK fittings are delivered assembled and tightened finger-tight. Disassembly prior to use may allow dirt and other foreign objects to enter.

- Before installing the screw connections, the external and internal threaded ends of the NPT threads must be cleaned.
- Wrap a sealing tape around the thread 2 to 2 1/2 times. The first thread must remain free.
- Insert the screw into the internal thread and tighten it finger tight.
- Key proof tightening.



b.) Installing pressure pipes

- Insert the piping into the LET-LOK fitting. Make sure that the tube is firmly attached to the screw shoulder and that the nut is tightened finger tight.
- It is recommended to pull only one mark on the hexagon of the nut up to the screw body. This marking serves as a marker of the starting point and the correct tightening strength.
- Tighten the nut now. For tubes with 1/4" (6mm) diameter and more, 1 1/4 turns of the nut are required. For tubes with a diameter of 3/16" (4mm) and less, 3/4 turns of the nut are required.
- A test gauge is also available to check the correct screw connection.

6.2 Electrical connection

The power supply of the AIRMO-1500 is via the M12 socket (B-coded) on the bottom. The supply is 24Vdc as standard.
A suitable connection cable of 1m length is included.

First, connect the connection cable to the power supply:

1	brown	24Vdc
5	grey	GND

Then connect the connection cable (M12 plug) to the AIRMO.

The status LED should light up red for about 5 seconds (restart). After that, the left LED will start flashing (network search). As soon as both LEDs light up green, the device is ready for use.

6.3 Configuration

As soon as the AIRMO-1500 is powered, communication with the online data center starts (the NET LED lights up green and flashes orange intermittently). A system test is carried out and status messages are transmitted. After that, the AIRMO is ready for operation and can be configured in the online data center.
To configure the AIRMO-1500, the differential pressure must be set at the maximum tank level on the data center. This parameter is transmitted from the data center to the device.

6.3.1 Online DataCenter

Access data (login and password) are required to use the online data center.
Booking is done via:

https://www.global-datacenter.de

Detailed assistance on how to use the online data center can be found under the following link:

https://airmo1k.anova.com

6.3.2 Setup Wizard

The setup wizard for the AIRMO-1500 can be accessed in the online data center under "Configuration". There, the required information about the measuring point and the operating mode of the AIRMO is queried in sequence. There are help texts with additional information for the input fields.

The following information is required:

- System designation - e.g. installation location (free text)
- Tank name - e.g. day no. (Free text)
- Operating mode - (see next page for an overview)
- Type of gas - which measuring material is in the tank
- Max. volume – Adjustable are e.g. 100% or xxx m^3/ Litre / kg
- Max Differential Pressure – Maximum Differential Pressure when the tank is full
- Limits

7 Operation

7.1 Modes

7.1.1 24V power supply

SMS		GPRS
Mode = 00	**Mode = 02**	**Mode = 03**
Data logger inactive	Data logger interval 15 min	Data logger interval 15 min
Transmission at routine time (adjustable)	Transmission at the time of routine call (2x per day)	Hourly transmission
Consumption-based messages		
User-defined alarm thresholds		
Polling interval of the sensors: 1 min		
Device is permanently connected to the LTE network		

7.2 Display, operation

7.2.1 LED Display

	Net		**Status**
from	Modem off	from	Power failure
flash	Net Search	flash	---
one	Posted	one	24Vdc mains supply
green	Transfer ok	green	OK
orange	Transfer active	orange	Warning Print
red	Transmission error	red	Sensor error

During the boot process, the status LED lights up red for 15s.

7.2.2 Manually triggering data transmission

A status message can be triggered manually by operating the reed contact with a permanent magnet. The position of the reed contact is marked on the nameplate. (Right side of the case)
When the button is pressed, the power LED goes off briefly and then changes to orange (transmission active).

8 Disturbances

8.1 Power supply, measuring range

Disturbance	Cause	Measure
LED(s) do not light up	Lack of energy supply. Supply voltage failed.	Checking the power supply.
Local display and online data center	Pressure range is not balanced.	The differential pressure when the tank is full (100%) can be adjusted at the data center. Please use the setup wizard under Configuration.

8.2 Data Transmission and Data Center

Disturbance	Cause	Measure
LED "NET" flashes continuously	LTE signal too weak	Contact Support
Login to the data center does not work	Login data not correct or not activated	Contact Support
Online datacenter not receiving data	Problems with LTE transmission	Contact Support
User-defined alarms and forwarding settings are not applied	Incorrect configuration in the online data center	Contact Support

For support in case of problems with data transmission or with the data center, please contact the support of WIKON Kommunikationstechnik GmbH.

Tel: +49 631 205 777 0
Email: support-eu@anova.com

8.3 Failure of the energy supply

In the event of a power failure, the data center detects that it is no longer receiving a routine call. The status of the system is then set to fault in the data center. Messages to the service personnel can be posted on the data center.

9 Maintenance

The AIRMO-1500 is maintenance-free.

Necessary repairs are to be carried out exclusively by the manufacturer.
Only original parts may be used (see chapter "Accessories").

10 Dismantling

10.1 Dismantling

The disassembly of the AIRMO-1500 must be carried out in reverse order as described in chapter "Commissioning".

10.2 Return

To return the device, use the original packaging or suitable transport packaging.

To avoid damage:

1. Unscrew the antenna.
2. Place the device with the insulation material in the packaging. Insulate evenly on all sides of the transport packaging.
3. If possible, add a bag of desiccant to the packaging.

Notes on returns:
www.anova.com or
office-eu@anova.com

11 Specifications

Specifications	DFÜ-AIRMO Module
GSM Frequencies LTE Frequencies	900, 1800 MHz B3, B8, B20
Max. transmitting power	33 dBm (2 W)
Required RSSI Level	-80 dBm (25%)
Power supply U_B	DC 24 V ±5% Pmax: 5 W M12 x 1 plug, 5-pin, B-coding according to IEC 61076-2-101 Pin Colour Assignment 1 brown 24 Vdc 5 grey GND
Permissible temperature range:	Storage: -40 ... +70 °C Operation: -20 ... +60 °C
Permissible humidity:	0 … 95% RH (non-condensing)
Protection:	IP65 to EN 60529 / IEC 60529
Dimensions	W x H x D: 100 x 240 x 81 mm with antenna and differential pressure sensor
Weight	Approx. 1.4 kg
EC conformity	CE EN 301 489 EN 301 511EN 301 908

12 Accessories

Description	Order No.
AIRMO-1500	G0025450
Connection cable	B0020108
Mounting kit (2x Male Tube Connector 6mm x Male NPT 1/4")	B0025415

13 System information

Serial number: _____

Telephone number: _____

Plant name: _____

Mounting location: _____

_____

_____

Tank name: _____

Mode: _____

Gas Type: _____

Max. Volume: _____

Max. differential pressure: _____