

# Brooks® VDM300 DI Water Vapor Delivery Module



## Brooks® VDM300 Vapor Delivery Module

## Essential Instructions Read before proceeding!

Brooks Instrument designs, manufactures and tests its products to meet many national and international standards. These products must be properly installed, operated and maintained to ensure they continue to operate within their normal specifications. The following instructions must be adhered to and integrated into your safety program when installing, operating and maintaining Brooks Instrument products.

- To ensure proper performance, use qualified personnel to install, operate, update, program and maintain the product.
- Read all instructions prior to installing, operating and servicing the product. If this instruction manual is not the correct manual, please see back cover for local sales office contact information. Save this instruction manual for future reference.

**▲ WARNING: Do not operate this instrument in excess of the specifications listed in the Instruction and Operation Manual. Failure to heed this warning can result in serious personal injury and / or damage to the equipment.**

- If you do not understand any of the instructions, contact your Brooks Instrument representative for clarification.
- Follow all warnings, cautions and instructions marked on and supplied with the product.

**▲ WARNING: Prior to installation ensure this instrument has the required approval ratings to meet local and national codes. Failure to heed this warning can result in serious personal injury and / or damage to the equipment.**

- Install your equipment as specified in the installation instructions of the appropriate instruction manual and per applicable local and national codes. Connect all products to the proper electrical and pressure sources.
- Operation: (1) Slowly initiate flow into the system. Open process valves slowly to avoid flow surges. (2) Check for leaks around the flow meter inlet and outlet connections. If no leaks are present, bring the system up to the operating pressure.
- Please make sure that the process line pressure is removed prior to service. When replacement parts are required, ensure that qualified people use replacement parts specified by Brooks Instrument. Unauthorized parts and procedures can affect the product's performance and place the safe operation of your process at risk. Look-alike substitutions may result in fire, electrical hazards or improper operation.
- Ensure that all equipment doors are closed and protective covers are in place to prevent electrical shock and personal injury, except when maintenance is being performed by qualified persons.

**▲ WARNING: For liquid flow devices, if the inlet and outlet valves adjacent to the devices are to be closed for any reason, the devices must be completely drained. Failure to do so may result in thermal expansion of the liquid that can rupture the device and may cause personal injury.**

### European Pressure Equipment Directive (PED)

All pressure equipment with an internal pressure greater than 0.5 bar (g) and a size larger than 25mm or 1" (inch) falls under the Pressure Equipment Directive (PED).

- The Specifications Section of this manual contains instructions related to the PED directive.
- Products described in this manual are in compliance with EN directive 2014/34/EU.
- All Brooks Instrument Flowmeters fall under fluid group 1.
- Products larger than 25mm or 1" (inch) are in compliance with PED category I, II or III.
- Products of 25mm or 1" (inch) or smaller are Sound Engineering Practice (SEP).

### European Electromagnetic Compatibility (EMC)

The Brooks Instrument (electric/electronic) equipment bearing the CE mark has been successfully tested to the regulations of the Electro Magnetic Compatibility (EMC directive 2014/30/EU).

Special attention however is required when selecting the signal cable to be used with CE marked equipment.

**Quality of the signal cable, cable glands and connectors:**

Brooks Instrument supplies high quality cable(s) which meets the specifications for CE certification.

If you provide your own signal cable you should use a cable which is overall completely screened with a 100% shield.

"D" or "Circular" type connectors used should be shielded with a metal shield. If applicable, metal cable glands must be used providing cable screen clamping.

The cable screen should be connected to the metal shell or gland and shielded at both ends over 360 Degrees.

The shield should be terminated to an earth ground.

Card Edge Connectors are standard non-metallic. The cables used must be screened with 100% shield to comply with CE certification.

The shield should be terminated to an earth ground.

For pin configuration : Please refer to the enclosed Instruction Manual.

### ESD (Electrostatic Discharge)

**▲ CAUTION: This instrument contains electronic components that are susceptible to damage by static electricity. Proper handling procedures must be observed during the removal, installation or other handling of internal circuit boards or devices.**

**Handling Procedure:**

1. Power to unit must be removed.
2. Personnel must be grounded, via a wrist strap or other safe, suitable means before any printed circuit card or other internal device is installed, removed or adjusted.
3. Printed circuit cards must be transported in a conductive container. Boards must not be removed from protective enclosure until immediately before installation. Removed boards must immediately be placed in protective container for transport, storage or return to factory.

**Comments**

This instrument is not unique in its content of ESD (electrostatic discharge) sensitive components. Most modern electronic designs contain components that utilize metal oxide technology (NMOS, SMOS, etc.). Experience has proven that even small amounts of static electricity can damage or destroy these devices. Damaged components, even though they appear to function properly, exhibit early failure.

**Installation and Operation Manual**

X-VAP-VDM300-eng

Part Number: 541B210AAG

October, 2018

**Brooks® VDM300 Vapor Delivery Module**

---

Dear Customer,

We appreciate this opportunity to service your vaporizer and flow control requirements with a Brooks Instrument device. Every day, flow customers all over the world turn to Brooks Instrument for solutions to their gas and liquid low-flow applications. Brooks provides an array of vaporizer, flow and pressure measurement and control products for various industries from biopharmaceuticals, oil and gas, fuel cell research and chemicals, to medical devices, analytical instrumentation, semiconductor manufacturing, and more.

The Brooks product you have just received is of the highest quality available, offering superior performance, reliability and value to the user. It is designed with the ever changing process conditions, accuracy requirements and hostile process environments in mind to provide you with a lifetime of dependable service.

We recommend that you read this manual in its entirety. Should you require any additional information concerning Brooks products and services, please contact your local Brooks Sales and Service Office listed on the back cover of this manual or visit [www.BrooksInstrument.com](http://www.BrooksInstrument.com)

Yours sincerely,

Brooks Instrument

## Essential Instructions Read before proceeding!

Brooks Instrument designs, manufactures and tests its products to meet many national and international standards. These products must be properly installed, operated and maintained to ensure they continue to operate within their normal specifications. The following instructions must be adhered to and integrated into your safety program when installing, operating and maintaining Brooks Instrument products.

- To ensure proper performance, use qualified personnel to install, operate, update, program and maintain the product.
- Read all instructions prior to installing, operating and servicing the product. If this instruction manual is not the correct manual, please see back cover for local sales office contact information. Save this instruction manual for future reference.

**⚠ WARNING: Do not operate this instrument in excess of the specifications listed in the Instruction and Operation Manual. Failure to heed this warning can result in serious personal injury and / or damage to the equipment.**

- If you do not understand any of the instructions, contact your Brooks Instrument representative for clarification.
- Follow all warnings, cautions and instructions marked on and supplied with the product.

**⚠ WARNING: Prior to installation ensure this instrument has the required approval ratings to meet local and national codes. Failure to heed this warning can result in serious personal injury and / or damage to the equipment.**

- Install your equipment as specified in the installation instructions of the appropriate instruction manual and per applicable local and national codes. Connect all products to the proper electrical and pressure sources.
- Operation: (1) Slowly initiate flow into the system. Open process valves slowly to avoid flow surges. (2) Check for leaks around the flow meter inlet and outlet connections. If no leaks are present, bring the system up to the operating pressure.
- Please make sure that the process line pressure is removed prior to service. When replacement parts are required, ensure that qualified people use replacement parts specified by Brooks Instrument. Unauthorized parts and procedures can affect the product's performance and place the safe operation of your process at risk. Look-alike substitutions may result in fire, electrical hazards or improper operation.
- Ensure that all equipment doors are closed and protective covers are in place to prevent electrical shock and personal injury, except when maintenance is being performed by qualified persons.

**⚠ WARNING: For liquid flow devices, if the inlet and outlet valves adjacent to the devices are to be closed for any reason, the devices must be completely drained. Failure to do so may result in thermal expansion of the liquid that can rupture the device and may cause personal**

## European Pressure Equipment Directive (PED)

All pressure equipment with an internal pressure greater than 0.5 bar (g) and a size larger than 25mm or 1" (inch) falls under the Pressure Equipment Directive (PED).

- The Specifications Section of this manual contains instructions related to the PED directive.
- Products described in this manual are in compliance with EN directive 2014/34/EU.
- All Brooks Instrument Flowmeters fall under fluid group 1.
- Products larger than 25mm or 1" (inch) are in compliance with PED category I, II or III.

## European Electromagnetic Compatibility (EMC)

The Brooks Instrument (electric/electronic) equipment bearing the CE mark has been successfully tested to the regulations of the Electro Magnetic Compatibility (EMC directive 2014/30/EU).

Special attention however is required when selecting the signal cable to be used with CE marked equipment.

### Quality of the signal cable, cable glands and connectors:

Brooks Instrument supplies high quality cable(s) which meets the specifications for CE certification.

If you provide your own signal cable you should use a cable which is overall completely screened with a 100% shield.

“D” or “Circular” type connectors used should be shielded with a metal shield. If applicable, metal cable glands must be used providing cable screen clamping.

## ESD (Electrostatic Discharge)

**⚠ CAUTION: This instrument contains electronic components that are susceptible to damage by static electricity. Proper handling procedures must be observed during the removal, installation or other handling of internal circuit boards or devices.**

### **Handling Procedure:**

1. *Power to unit must be removed.*
2. *Personnel must be grounded, via a wrist strap or other safe, suitable means before any printed circuit card or other internal device is installed, removed or adjusted.*
3. *Printed circuit cards must be transported in a conductive container. Boards must not be removed from protective enclosure until immediately before installation. Removed boards must immediately be placed in protective container for transport, storage or return to factory.*

### **Comments**

*This instrument is not unique in its content of ESD (electrostatic discharge) sensitive components. Most modern electronic designs contain components that utilize metal oxide technology (NMOS, SMOS, etc.). Experience has proven that even small amounts of static electricity can damage or destroy these devices. Damaged components, even though they appear to function properly, exhibit early failure.*

Brooks® VDM300 Vapor Delivery Module

<b>Paragraph Number</b>		<b>Page Number</b>
<b>Section 1 Introduction</b>		
1-1	Introduction.....	1-1
1-2	How To Use This Manual .....	1-1
1-3	Product Support References .....	1-2
1-4	Warning, Caution and Notice Statements .....	1-2
1-5	Product Warranty .....	1-2
1-6	Glossary of Terms and Acronyms.....	1-2
1-7	Description .....	1-3
1-8	Specifications for VDM300 Devices .....	1-4
1-9	Overview of VDM300 Device Enclosure .....	1-5
1-10	Internal Layout of VDM300 and Basic Function .....	1-9
1-11	Dimensions of VDM300 Device Enclosure.....	1-10
<b>Section 2 Installation</b>		
2-1	General.....	2-1
2-2	Receipt of Equipment.....	2-1
2-3	Recommended Storage Practice .....	2-2
2-4	VDM300 Mounting and Orientation .....	2-2
2-5	Mechanical Connections .....	2-2
2-5-1	Inlet Connections.....	2-3
2-5-2	Outlet Connections.....	2-4
2-6	Electrical Connections.....	2-4
2-7	Diagnostic Port Connection.....	2-8
2-8	Return Shipment .....	2-8
2-9	Transit Precautions .....	2-8
2-10	Removal From Storage .....	2-8
2-11	Product Safety Information.....	2-9
<b>Section 3 Startup</b>		
3	Operation.....	3-1
3-1	Idle Mode.....	3-1
3-2	Normal Mode.....	3-1
3-2-1	Start-up (Normal Mode).....	3-2
3-2-2	Ready-to-Use (Normal Mode) .....	3-3
3-2-3	Zeroing the VDM300 .....	3-3
3-2-3-1	Procedure for Manually Zeroing the VDM300.....	3-4
3-3	Drain Mode.....	3-4
3-4	Operation of BEST for VDM300 .....	3-5
<b>Section 4 Maintenance and Troubleshooting</b>		
4	Maintenance and Troubleshooting .....	4-1
4-1	Introduction.....	4-1
4-2	Routine Maintenance .....	4-1
4-3	Troubleshooting the VDM.....	4-2
4-4	General Troubleshooting Guide .....	4-3
4-5	Using BEST as a Diagnostic Tool.....	4-4
4-6	VDM300 Removal .....	4-9
4-7	VDM300 Packaging.....	4-9
4-8	VDM300 Shipping .....	4-9

<u>Paragraph Number</u>	<u>Page Number</u>
<b>Section 5 Product Description Code</b>	
5 VDM300 Product Description Code .....	5-1
<b>Section A Essential Instructions</b> .....	A-1
<b>Warranty, Local Sales/Service Contact Information</b> .....	Back Cover

**Figures**

<u>Figure Number</u>	<u>Page Number</u>
1-1 VDM Vapor Delivery Module .....	1-1
1-2 Front View of the VDM300 .....	1-5
1-3 Front View Details of the VDM300 LED Indicators .....	1-6
1-4 Bottom View of the VDM .....	1-7
1-5 VDM300 Block Diagram .....	1-9
2-1 VDM300 Installation Orientation.....	2-3
2-2 Diagram of Electrical Connections to the VDM300 .....	2-5

**Tables**

<u>Table Number</u>	<u>Page Number</u>
1-1 Terms and Acronyms.....	1-2
1-2 Specifications for Standard VDM300 .....	1-4
2-1 VDM300 Analog Connector Pin-Out.....	2-6
3-1 Signals Required for Switching Modes on the VDM300.....	3-1
4-1 General Troubleshooting Information and Courses of Action.....	4-3
4-2 List of Possible Alarm Codes Detected by the VDM300 .....	4-4
5-1 VDM Product Description Code .....	5-1

## Brooks® VDM300 Vapor Delivery Module

**1-1 Introduction**

The VDM300 is a self-contained, ultra-high purity vapor delivery module providing precise, low flow deionized (DI) water vapor for high purity applications such as microelectronics manufacturing. Utilizing a heated, all-welded titanium vapor tank with automated level-sensing and filling, the VDM300 produces vapor flow in a non-superheated vapor stage to reduce the aggressive effects of DI water. Vapor flow is controlled by an integrated Brooks Instrument high temperature thermal mass flow controller. The thermal mass flow controller is a high stability flow sensor compatible with the elevated internal temperatures found in the VDM300.



Figure 1-1 VDM Vapor Delivery Module

**1-2 How To Use This Manual**

This manual is intended to provide the user with all the information necessary to install, operate, troubleshoot and maintain this vaporizer. The manual is organized in the following sections:

Section 1 Introduction

Section 2 Installation

Section 3 Operation

Section 4 Maintenance and Troubleshooting

Section 5 Product Description Code

Appendix A Essential Instructions

Warranty, Local Sales/Service Contact Information

It is recommended that this manual be read in its entirety before attempting to operate or repair these devices.



### 1-3 Product Support References

Refer to [www.BrooksInstrument.com](http://www.BrooksInstrument.com) for Brooks sales and service locations and to obtain other documents that support the VDM300 Series.

Those documents include:

- Brooks VDM300 data sheet (DS-VAP-VDM300-eng)
- Supplemental Manual for Brooks® Instrument EtherCAT for VDM300 Series (X-DPT-EtherCAT-VDM300-eng; part number: 541B217AAG)
- Supplemental Manual for Brooks Instrument Expert Support Tool (X-SW-BEST-eng; part number 541B197AAG)

### 1-4 Warning, Caution and Notice Statements

Warning, caution and notice statements are located throughout this manual in ANSI format.

A **WARNING** statement indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.

A **CAUTION** statement indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.

A **NOTICE** statement describes specific information that requires special attention.

### 1-5 Product Warranty

Product warranty information can be found on the back cover of this manual and on the Brooks website at [www.BrooksInstrument.com](http://www.BrooksInstrument.com). This information provides general warranty information, limitations, disclaimers, and applicable warranty periods according to product group.

### 1-6 Glossary of Terms and Acronyms (Refer to Table 1-1)

Table 1-1 Terms and Acronyms

Term/ Acronym	Definition
BEST	Brooks Expert Support Tool (GUI)
COO	Cost of Ownership
DIW	Deionized Water
DSP	Digital Signal Processor
EtherCAT	Ethernet for Control Automation Technology is an open high performance Ethernet-based fieldbus system
F.S.	Full scale
GUI	Graphical user interface (refer to BEST)
IEC	International Electrotechnical Commission
LA	Link Active
LED	Light-emitting diode
MFC	Mass flow controller
PID	Proportional Integral Derivative
PDC	Product description code
PSID	Pounds per square inch differential
PSIG	Pounds per square inch gauge
RH	Relative humidity
RJ-45	Standard type of connector for network cables featuring eight pins to which the wire strands of a cable interface electrically
SDS	Safety data sheet
S.P.	Setpoint



# Brooks® VDM300 Vapor Delivery Module

## 1-7 Description

The VDM300 is a self-contained, ultra-high purity vapor delivery module providing precise, low flow deionized (DI) water vapor for high purity applications such as microelectronics manufacturing. Utilizing a heated, all-welded titanium vapor tank with automated level-sensing and filling, the VDM300 produces vapor flow in a non-superheated vapor stage to reduce the aggressive effects of DI water. Vapor flow is controlled by an integrated Brooks Instrument high temperature thermal mass flow controller. The mass flow sensor is a high stability flow sensor compatible with the elevated internal temperatures found in the VDM300.

The result is a highly accurate, robust and responsive vapor delivery module for challenging conditions.

- High temperature capability ensures reliable delivery of condensable gases and precursors
- Digital measurement and control enhances accuracy ( $\pm 1\%$  of setpoint  $>10\%$  FS) and repeatability ( $\pm 0.2\%$  F.S.)
- Ultra-high purity vapor flow path ensures integrity and purity of the gas/vapor
- Ultra-stable flow sensor reduces maintenance resulting in superior uptime and lower cost of ownership (COO)
- All metal diaphragm-free control valve design optimizes reliability

### Ultra High Purity Flow Path

- The mass flow controllers are constructed with a  $10\mu$  in Ra max surface finish.
- Overall reduced surface area and un-swept volumes for faster dry-down during purge steps
- Long-term sensor and device stability for maximum yield and throughput

### Ultra High Purity Process Connections

VDM300 supports all metal seal/UHP industry gas connection interface standards for full OEM and process coverage.

- DI Water Inlet:  $\frac{1}{4}$ " VCR Male or  $\frac{1}{4}$ " tube compression fitting
- DI Water Vapor Outlet:  $\frac{3}{8}$ - $\frac{1}{2}$ " VCR Male fitting
- Tank Drain:  $\frac{1}{8}$ " Instant Tube fitting

### Analog & Digital Interfaces

The VDM300 supports analog input/output of 0-5 volt dc, TTL (0-5 Vdc) digital controls and alarms or optionally up to 24 Vdc when using an external power supply, a USB diagnostic port, and EtherCAT communications. Analog and digital controls are transmitted via the 15-pin D-subminiature connector. Reference Table 2-1 for pin assignments. USB digital communication is transmitted via the micro-USB diagnostics port. Optional EtherCAT digital communication is transmitted via the dual RJ-45 connectors. Reference Supplemental Manual for Brooks Instrument EtherCAT for VDM300 Series (X-DPT-VDM300-EtherCAT) for EtherCAT assignments and Supplemental Manual for Brooks Instrument Brooks Expert Support Tool (X-SW-BEST-eng) for diagnostic port communication.

### NOTICE

Please note that the diagnostic port is strictly for the purpose of troubleshooting and diagnostics. It is NOT to be used in normal operations.

**1-8 Specifications for VDM300 Devices (See Table 1-2)**

**⚠ WARNING**

**Do not operate this instrument in excess of the specifications listed below. Failure to heed this warning can result in serious personal injury and/or damage to the equipment.**

Table 1-2 Specifications for Standard VDM300

Performance Specifications <sup>1</sup>	Description
Full Scale Ranges(H <sub>2</sub> O)	3000 sccm
Turndown Ratio	20:1
Step Response Time	≤ 2 seconds (±2% of setpoint)
Accuracy	±1.0% of setpoint(> 10% full scale); ±0.2% of full scale(5-10% full scale setpoint)
Linearity	±0.5% of full scale
Repeatability	±0.2% of full scale
Temperature Coefficient	0.05% F.S. per °C (zero and span)
Valve Shutdown	<0.5% F.S. (water vapor)

**Electrical**

Communication	Analog or EtherCAT
Connections	15-pin D-Sub and dual RJ-45
Input Signals	Flow setpoint (0 to 5 Vdc)
	Start up/drain
Output Signals	Flow output (0 to 5 Vdc)
	Ready to use
Power	DC: ±15 Vdc ±5% @ 1.2 amp
	AC: 208-230 Vac, 50/60 Hz, 290 watts nominal
Diagnostic Port	Micro USB

**Mechanical**

Fittings	See Model Code for list
Weight	Dry: 15lbs Wet: 16lbs
Mounting Orientation	Vertical (inlet down)

**Environmental**

Maximum Outlet Pressure	≤200 Torr
DI Water Supply Pressure	10 to 40 psig (20 psig recommended)
DI Water Quality	UHP: ≥18 mega ohm-cm
N <sub>2</sub> Purge Pressure	10 to 40 psig (20 psig recommended)
Ambient Temperature Range	15°C to 45°C
Humidity	0 to 95% RH, non-condensing

**Certifications**

Electromagnetic Compatibility	Fully compliant to Directive 2014/30/EU (EN: 61326-1:2013)
Low Voltage	Fully compliant to Directive 2014/35/EC (EN: 61010-1:2010)
RoHS	Fully compliant to Directive 2011/65/EU
REACH	Fully compliant to Directive EC 1907/2006
SEMI E54.20-1108	Standard for Sensor/Actuator Network Communication for EtherCAT

1. All performance specifications apply only in the ready state, ready light on.

Special conditions for safe use:

- A. To ensure full EMC protection the ferrite core included with the device (Würth Electronics Inc Part Number 74271131) must be installed to the control cable.
- B. To ensure full EMC protection a shielded AC power cable and a shielded control cable (<30 m. length) must be supplied by the user.

Brooks® VDM300 Vapor Delivery Module

1-9 Overview of VDM300 Device Enclosure



Figure 1-2 Front View of the VDM300

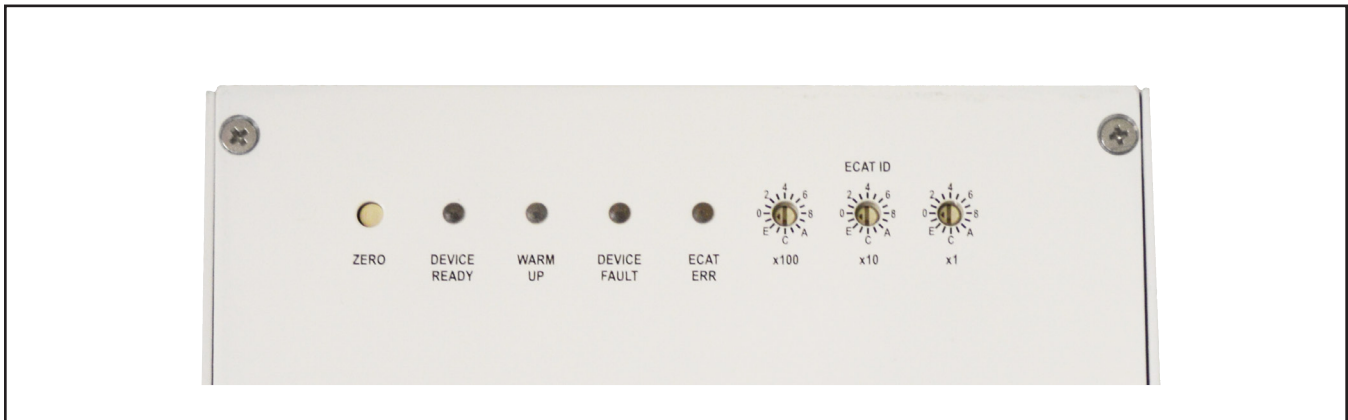


Figure 1-3 Front View Details of the VDM300 LED Indicators

Figure 1-3 (above) shows a detailed view of the switches and indicators located on the front of the VDM300. The following is a description of each switch and indicator.

**ZERO:** This is a momentary detent switch that activates a zeroing function to remove any zero offset that may have accumulated over time during normal VDM300 operation. Refer to the section called VDM300 Zeroing later in this manual for information on when and how to use this function properly.

**DEVICE READY:** (Green LED) This indicates when the VDM300 is Ready-to-Use (RTU). It also serves as an indicator when a drain cycle is complete (blinking).

**WARM UP:** (Amber LED) This indicates when the VDM300 is warming up (solid) or at the desired temperature (blinking).

**DEVICE FAULT:** (Red LED) This indicates an alarm/fault condition.

**ECAT ERR:** (Red LED) Indicates EtherCAT error status. See the Supplemental Manual for Brooks Instrument EtherCAT for VDM300 Series ( X-DPT-VDM300-EtherCAT) for details on the various states.

**ECAT ID:** These three 16-position rotary switches (X100, X10 and X1) are used to set the serial address for the VDM300 device in EtherCAT communication networks. The three switches create a 3-digit address as in the following example: if the X100 switch is set to “A”, the X10 switch to “5” and the X1 to “B”, the serial address would be “A5B”.

Brooks® VDM300 Vapor Delivery Module

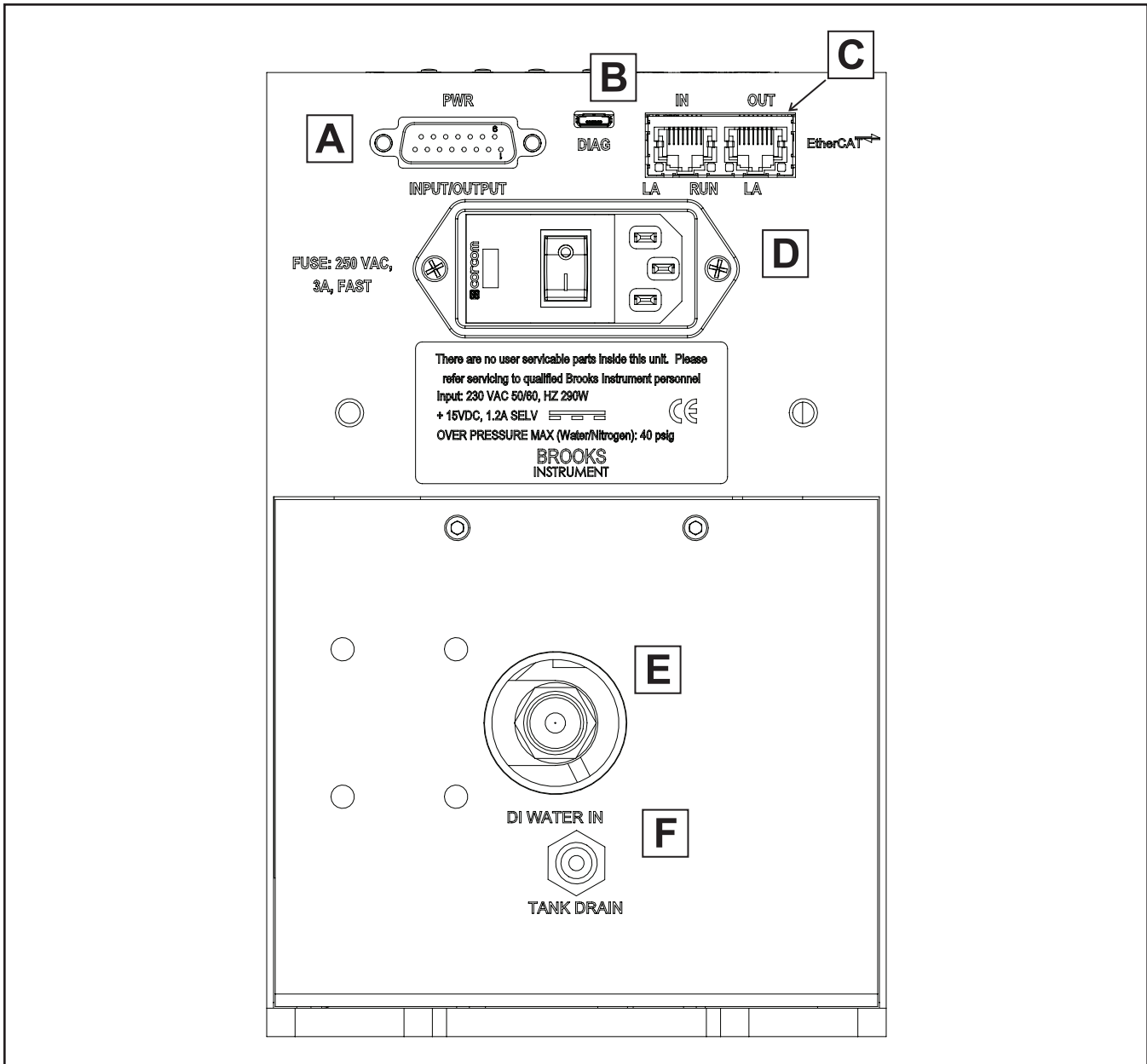


Figure 1-4 Bottom View of the VDM

Figure 1-4 is a diagram of the bottom view of the VDM300. The following is a description of the various connections and features:

**A. Input/Output:** This connection is a 15-Pin D-subminiature (DB-15) plug (male). DC power and operational signals are routed through this connector. Reference Table 2-1 for details.

**B. DIAG:** This connection is a micro USB port. This provides communication access to the VDM300 for use by the Brooks Expert Support Tool (BEST). See Section 3-4 Operation of the GUI for VDM300 and the Brooks GUI manual for information on how to properly connect to and utilize this port.

**C. EtherCAT:** This connection is a dual RJ-45 connection. This connection

allows the user to send commands and set points and receive flow and alarm signals from the VDM300 utilizing an EtherCAT network. See Figure 1-4.

**D. Power Entry Module:** The power entry module is used to connect AC power to the VDM300 tank heaters. See Section 1-13 VDM300 Internal Layout and Basic Function for more details about the tank heaters. The VDM300 is configured to accept 208-230 VAC power, provided by the end user, via a shielded AC power cord with an IEC C-13 connector.

The power entry module consists of 3 main features as follows:

- a. The AC input plug is a standard IEC C-14 connector where AC power can be connected to the VDM300.
- b. The ON/OFF switch for switching AC power to the VDM300 tank heaters on or off. Please note that you cannot "power cycle" the device from this switch; only the tank heaters.
- c. The fuse drawer holds two 250V 3A fuses to protect the AC tank heaters.

**E. DI Water Inlet:** This is where the DI water supply is to be connected by the end user. The fitting is either a 1/4" VCR Male fitting or a 1/4" compression tube fitting depending on the configuration ordered. Ensure the DI water source is equal to or better than UHP ( $\geq 18$  mega ohm-cm). This is also where a nitrogen gas supply is to be connected for the purpose of draining the VDM300. Ensure that either fluid is pressurized to 10 - 40 psig. See Section 2-5-1 Inlet Connections for more details and instructions on how to connect DI water and/or N2 to the inlet.

**F. Tank Drain:** This is a 1/8" Instant Tube Fitting. This is the outlet through which the DI water is drained from the tank. See Section 1-10 VDM300 Internal Layout and Basic Function for more details about the tank.

# Brooks® VDM300 Vapor Delivery Module

## 1-10 Internal Layout of VDM300 and Basic Function

Figure 1-5 below illustrates the internal layout of the VDM300 system. The VDM300 has a titanium tank inside that serves as a reservoir for DI water and a Mass Flow Controller (MFC). The DI water is heated to the vapor state in the tank through the use of heaters attached to the tank and a heater control system along with the vacuum outlet pressure. The liquid water level is monitored by a level detection system (not shown in diagram) in the tank. The MFC delivers the appropriate amount of DI water vapor on demand through the DI water vapor outlet. The fill valve controls the flow of DI water into the tank which works in tandem with the level detection system to maintain the optimal amount of liquid DI water in the tank for vaporization during operation. The tank drain controlled by the drain valve allows the tank to be emptied for maintenance and extended periods of downtime.

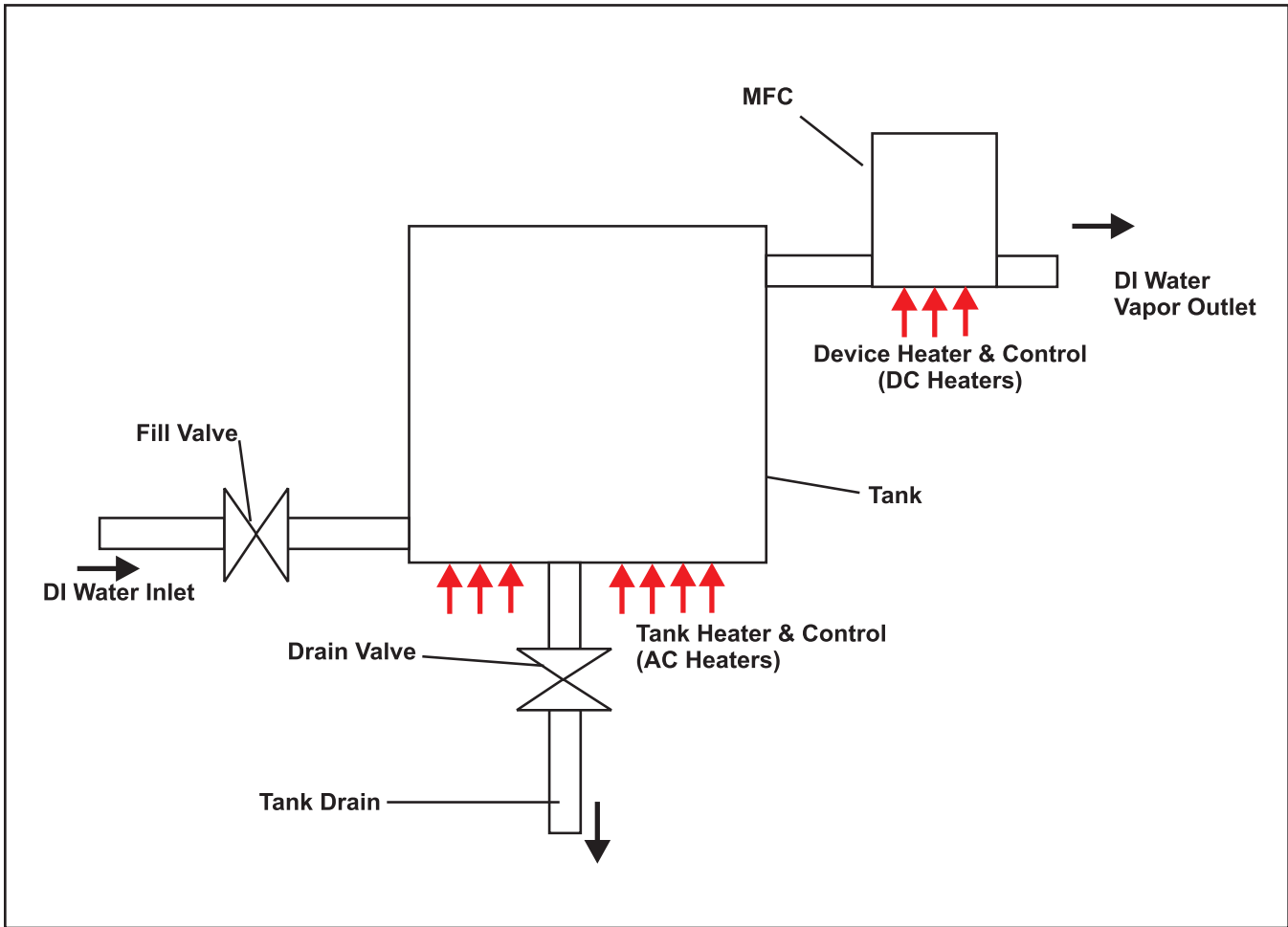


Figure 1-5 VDM300 Block Diagram



## 2-1 General

This section provides installation instructions for the Brooks VDM300 Vapor Delivery Module. The installation of the VDM300 involves mounting the device, making the required mechanical connections and making the required electrical connections

## 2-2 Receipt of Equipment

When the instrument is received, the outside packing case should be checked for damage incurred during shipment. If the packing case is damaged, the local carrier should be notified at once regarding their liability. A report should be submitted to your nearest Product Service Department.

### Brooks Instrument

407 W. Vine Street  
P.O. Box 903  
Hatfield, PA 19440 USA  
Toll Free (888) 554 FLOW (3569)  
Tel (215) 362 3700  
Fax (215) 362 3745  
E-mail: BrooksAm@BrooksInstrument.com  
www.BrooksInstrument.com

### Europe

Brooks Instrument GmbH  
Zur Wetterwarte 50 Haus 377/B,  
01109 Dresden  
Germany  
Tel +49 (0) 351 215 20 442

### Asia

Brooks Instrument Korea, Ltd.  
D-406 Bundang Techno Park 151  
Sungnam, Kyungki-do, 463-070  
Korea  
Tel +82 31 708 2522

In case you need technical assistance:

USA 888 275 8946	Taiwan +886 3 5590 988
Europe +49 351 215 2040	China +86 21 5079 8828
Japan +81 3 5633 7100	Singapore +6297 9741
Korea +82 31 708 2521	

Remove the envelope containing the packing list. Unpack and inspect the VDM300 and additional items for any possible shipping damage. The VDM300 is shipped with two each 312 series replacement fuses for the power entry module, a 6' length of 1/8" O.D. Teflon tubing, a ferrite core for the control cable, the certificate of conformance/ final test data and the Installation & Operations Manual. The tubing can be connected to the tank drain when draining DI water from the tank inside the VDM300. Contact Brooks if there are any problems or if more information is required.

The following items can be purchased separately; these items are not necessary for the installation and are not used for normal operation of the VDM300 but can be utilized for troubleshooting:

The Brooks Expert Support Tool (BEST) provides diagnostic tools and an alternate access to VDM300 functions.

*NOTE: The BEST must be installed on a separate computer in order to perform any diagnostic function. Contact Brooks for information on purchasing the software.*

## Brooks® VDM300 Vapor Delivery Module

---

### 2-3 Recommended Storage Practice

---

If intermediate or long-term storage of the device is required, it is recommended that it be stored in accordance with the following conditions:

- Within the original shipping container.
- Ambient temperature 21°C (70°F) nominal, 32°C (90°F) maximum, 7°C (45°F) minimum.
- Relative humidity 45% nominal, 60% maximum, 25% minimum.

### 2-4 VDM300 Mounting and Orientation

---

Figure 2-1 shows the proper mounting orientation for the VDM300. The VDM300 should be mounted using four 5/16" (7.9mm) screws tightening them to the screw manufacturer's recommended specifications.

#### CAUTION

**Appropriate safeguards should be put in place to prevent damage to surrounding equipment in the event of a leak.**

### 2-5 Mechanical Connections

---

Figure 1-6 shows the mechanical dimensions of the VDM300

The recommended installation procedure guidelines are as follows:

- The device should be located in a clean, dry atmosphere relatively free from shock and vibration.
- Install the device in such a manner that permits easy purge and removal if the device requires servicing.

Prior to installation, ensure that all piping is clean and free from obstructions. Install piping in such a manner that permits easy access to the device if removal becomes necessary.

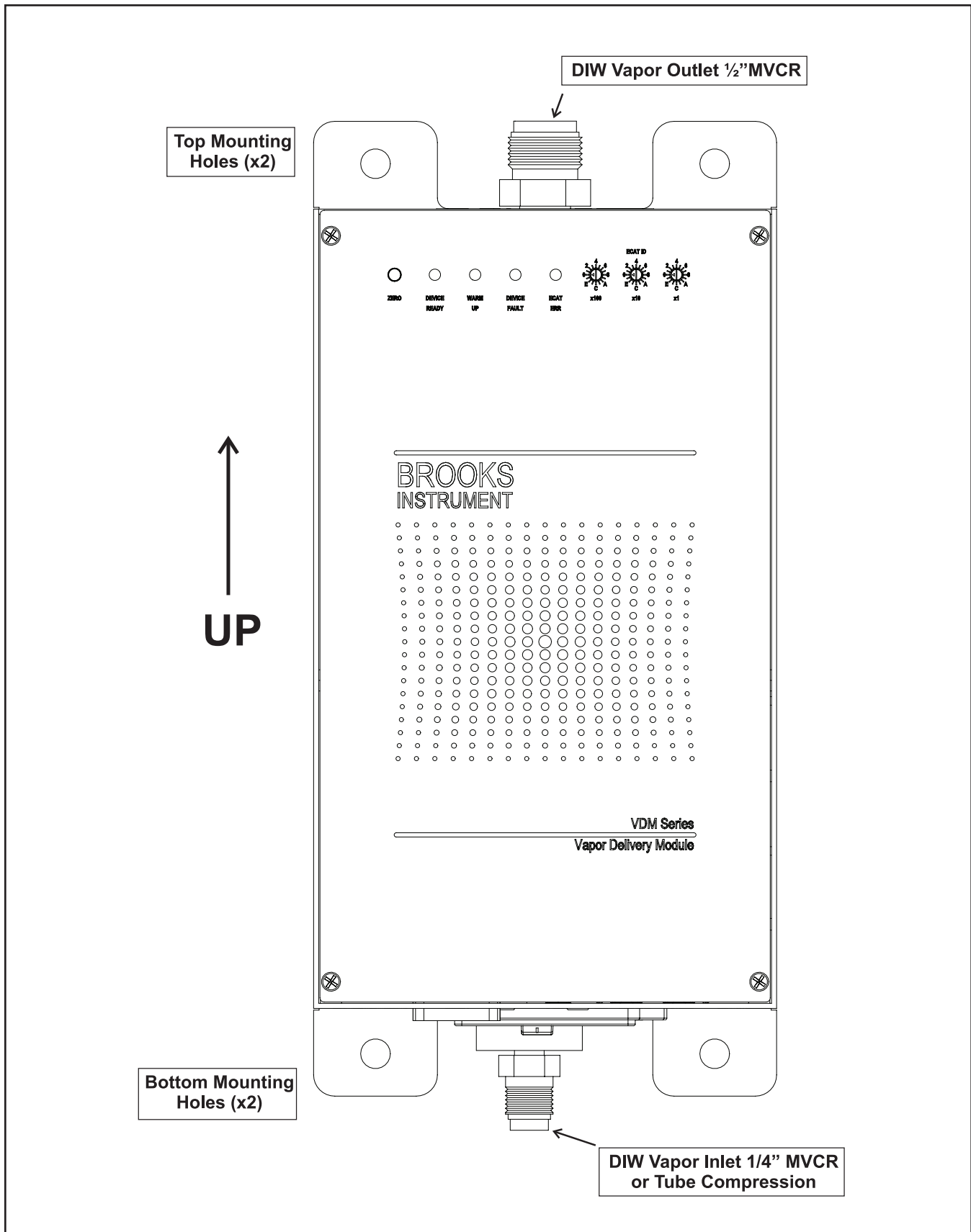


Figure 2-1 VDM300 Installation Orientation

## Brooks® VDM300 Vapor Delivery Module

## 2-5-1 Inlet Connections

**DI Water & Nitrogen Inlet:** The VDM300 can be ordered with a 1/4" VCR male fitting or a 1/4" tube compression fitting. This inlet is where the DI water source is connected for normal operation, or where the nitrogen source is connected when draining the VDM300. It is up to the user to make sure that the proper source is available for the particular mode of operation desired. NOTE: The inlet pressure for both fluid sources must be between 10-40 psig for proper operation.



**Tank Drain:** The VDM300 has a 1/8" Instant Tube Fitting. This is the port where the water will drain out of the tank of the VDM300. Make sure that the 1/8" drain tube is properly connected to this port when draining the tank. The tubing should bottom out in the fitting. Leave this drain line permanently connected as repeated coupling and uncoupling can cause unnecessary damage to the tubing.

## 2-5-2 Outlet Connections

**Vapor Outlet:** The VDM300 has a 1/2" VCR male fitting for this connection. The VDM300 is designed to deliver vapor into a vacuum so be sure that the connection to the tool will remain at or below 200 Torr during normal operation.

Because the internal MFC control valve is not a complete shutoff valve, it is highly recommended that a shutoff valve be installed downstream of the VDM300 to isolate it during device zeroing.



## 2-6 Electrical Connections

Figure 2-2 shows a diagram of the electrical connections that go to the VDM300. Read through the following connection descriptions and make certain that the interfacing connections from the user side meet the required specifications before any actual connections are made to the VDM300. Detailed instructions on how to make the electrical connections will follow.

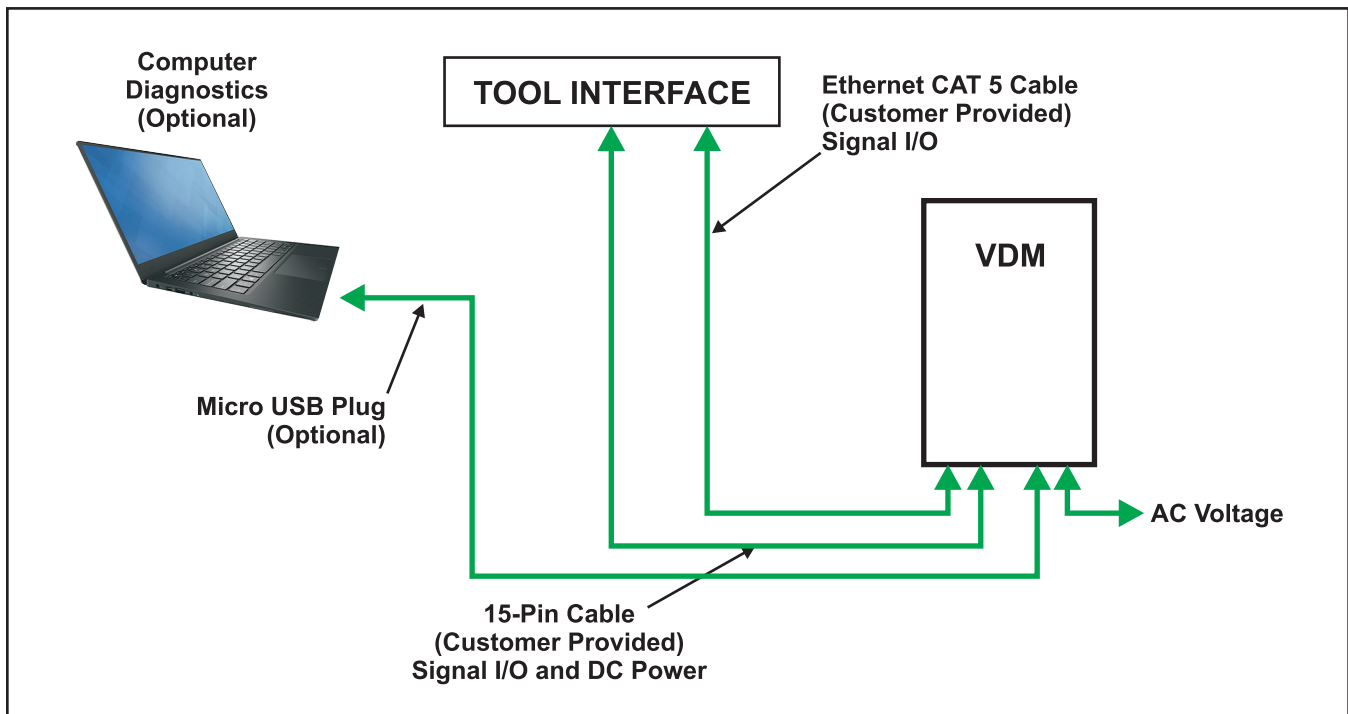


Figure 2-2 Diagram of Electrical Connections to the VDM300

Brooks® VDM300 Vapor Delivery Module

**Input/Output Connection:** The Input/Output connection needs to be connected to the tool interface. It is this connection that allows the user to send commands and setpoints and receive flow and alarm signals from the VDM300. It is also where DC power ( $\pm 15$  Vdc) for the internal electronics and the DC powered MFC heaters is needed. The connector on the VDM300 is a 15-pin D-subminiature (DB-15) plug (male). The user must provide a 15-wire interface cable with a 15-pin D-subminiature (DB-15) receptacle (female) on the VDM300 end. To ensure full EMC protection, install the ferrite core, included with the device, on the cable at a point closest to the VDM300.

Table 2-1 shows the pin configuration for the Input/Output DB-15 connector.

Table 2-1 VDM300 Analog Connector Pin-Out

15-Pin Connector	Schematic Signal Name	Direction	Signal State	Description
1	0-24Vdc Optional	Input	Logic levels default to 5VDC for any input <5 VDC.	Sets logic levels for digital output on Pins 4, 10 & 13.
2	Flow Signal Out	Output	0 to 5VDC	Scaled to vapor mass flow rate
3	Normal Operation	Input	Ground- Active Floating-Inactive	Grounding this signal will prepare the system for vapor delivery. It should remain grounded during the delivery process.
4	Error Signal A	Output	+5 to 24VDC or Ground	This signal is Brooks programmable.
5	I/O Common	Input/ Output	N/A	Digital Ground Reference
6	-15 VDC	Input	-15 VDC	Negative rail for power supply circuitry
7	+15 VDC	Input	+15 VDC	Positive rail for power supply circuitry
8	Set Point	Input	0 to 5 VDC	Analog input scaled to desired vapor mass flow rate
9	Auxiliary	Input	N/A	Function Unassigned
10	Error Signal B	Output	+5 to 24VDC or Ground	This signal is Brooks programmable.
11	Analog Ground	Input/output	N/A	Ground reference for analog circuitry
12	Analog Ground	Input/output	N/A	Ground reference for analog circuitry
13	VDM 300 Status Indicator	Output	+5 to 24VDC or Ground	5-24 VDC indicates System is not ready, Ground indicates System ready- to-use. Oscillation between Ground and High at 1Hz indicates Drain Mode
14	System Drain	Input	Ground - Active Floating - Inactive	Grounding this signal will initiate a System Drain when Pin 3 is inactive.
15	Chassis Ground	Input	N/A	Reference ground for chassis

**EtherCAT Connection:** The VDM300 provides optional, incremental EtherCAT communication via dual RJ45 jacks. In order to enable EtherCAT communication protocol, it must be requested at time of order. An Ethernet Cat 5 type cable needs to be connected between the tool interface and the VDM300. This connection allows the user to send commands and set points and receive flow and alarm signals from the VDM300. It also enables firmware upgrades. Please note that the EtherCAT communication replicates all of the analog I/O functions with the exception of the DC power supply. The VDM300 always requires the Analog Connection for the DC power supply. Reference Supplemental Manual for Brooks Instrument EtherCAT for VDM300 Series (X-DPT-EtherCAT-VDM300-eng) for specific EtherCAT assignments.

**Power Entry Module Connection and Configuration:** The connection to the power entry module is a standard IEC C-14 connector. This is where AC power for the VDM300 internal tank heaters is connected. This AC power is only for the tank heaters. It does not supply power to any of the internal electronics in the VDM300. Without this power, however, the VDM300 will not operate properly since there will be no power available to heat the DI water in the titanium tank.

**⚠ NOTICE**

**Note that if the fuses need to be replaced, make certain that the reason the fuses were blown is found and corrected.**

**Diagnostic Port Connection:** There is one more optional electrical connection for using the optional USB communication connection. This connection is not used for normal VDM300 operation. This connection will be explained in Section 2-7 Diagnostic Port Communication.

Assuming that the user connections meet the above mentioned requirements, the following steps can be taken to complete the installation of the VDM300:

1. Make certain that the VDM300 is properly mounted and that all mechanical connections have been properly made. Refer to Sections 2-4 and 2-5 earlier in this manual.
2. Make certain that the ON/OFF switch in the power entry module is in the “Off” or “ $\emptyset$ ” position.
3. Connect the tool interface DB-15 receptacle to the Input/Output DB-15 plug on the VDM300. It is recommended that this connection be secured to the jack screws on either side of the DB-15 plug on the VDM300. Note that if the DC power supplied by the user is on, the VDM300 electronics will power up at this point. It is recommended that Pin 4 and Pin 14 of the DB-15 not be grounded at this point to keep the VDM300 in the idle state.
4. Attach the supplied ferrite core to the control cable right below the DB-15 connector.
5. Connect the AC power to the power entry module.
6. Switch the ON/OFF switch on the power entry module to the “On” or “1” position.

The installation process for normal VDM300 operation is now complete.



## Brooks® VDM300 Vapor Delivery Module

---

### 2-7 Diagnostic Port Connection

---

The VDM300 can also be operated in a Service Mode through the micro USB diagnostic port connection utilizing Brooks Expert Support Tool (BEST) and a USB to micro USB cable. You should not use this port for normal operation. The BEST GUI software installed on a PC acts as the interface to perform these operations. For more information on the use of the BEST, see Section 4-5 Operation of the Brooks Expert Support Tool (BEST) for VDM300 later in this manual and/or the BEST manual available on the Brooks Instrument website.

### 2-8 Return Shipment

---

Prior to returning any device to the factory, visit the Brooks web site ([www.BrooksInstrument.com](http://www.BrooksInstrument.com)) for a Return Materials Authorization Number (RMA#), or contact one of the locations provided on p. 2-1

Prior to returning the device, it must be drained & purged in accordance with the following:

#### **WARNING**

**Before returning the device purge thoroughly with a dry inert gas such as Nitrogen before disconnecting gas connections. Corrosion or contamination may occur upon exposure to air.**

All flow devices returned to Brooks require completion of the Brooks Instrument Decontamination Statement, along with a Safety Data Sheet (SDS) for the fluid(s) used in the instrument. Failure to provide this information will delay processing by Brooks personnel.

Copies of these forms can be downloaded from the Brooks website ([www.brooksinstrument.com/globalsupportcenters](http://www.brooksinstrument.com/globalsupportcenters)) or are available from any of the Brooks Instrument locations provided on the back cover.

### 2-9 Transit Precautions

---

To safeguard against damage during transit, transport the device to the installation site in the same container used for transportation from the factory, if circumstances permit.

### 2-10 Removal from Storage

---

Upon removal of the device from storage, a visual inspection should be conducted to verify its “as-received” condition. If the device has been subject to storage conditions in excess of those recommended (refer to “2-3 Recommended Storage Practice” on p. 16), it should be subjected to a pneumatic pressure test in accordance with applicable vessel codes.

## 2-11 Product Safety Information

Make sure you understand the following safety information before you install and operate the VDM300.

### Hazards

The VDM300 does not use hazardous chemicals or gases in the normal operation or maintenance of the unit. Nitrogen is used during the drain cycle and de-ionized water is used as the source for creating water vapor.

### Safety Interlocks

The VDM300 uses 208-230 VAC to power the tank heaters. The tank heaters have a primary protection of two fuses located in the fuse drawer of the power entry module. The fuses are rated for 3 amps at up to 250 VAC. A secondary form of protection for the tank heaters is a Thermal Cut-Off fuse (TCO) in series with the heaters.

### Outlet Fitting

The outlet fitting will become hot during normal operation. Take the necessary precautions to avoid being burned such as wearing gloves. Refer to the hazard label on the VDM300.



## Brooks® VDM300 Vapor Delivery Module

### 3 Operation

The VDM300 has three main modes of operation: Idle, Normal, and Drain. In each mode the VDM300 functions are in different conditions. Also, in the Normal mode, there is a sub-mode referred to as Warm-up or Start-up. Table 3-1 shows the required states of Pins 3 and 14 of the Input/Output DB-15 to achieve the desired mode of operation. In the following sections, each mode and how to achieve each mode will be discussed.

*Table 3-1 Signals Required for Switching Modes on the VDM300*

#### 3-1 Idle Mode

Input Pin 3	Input Pin 14	Mode
Floating	Floating	Idle
Grounded	Floating	Normal
Floating	Grounded	Drain
Grounded	Grounded	Unknown State (Interrupts previous mode)

The Idle Mode is just that; the VDM300 is idle. It is expected that AC and DC power to the VDM300 is on; therefore the internal electronics are active. However, the tank and MFC heaters are off, the fill and drain water valves are closed, and the VDM300 will not deliver water vapor on demand. The amber “WARM UP” LED will be flashing and the other two LEDs, “DEVICE FAULT” and “DEVICE READY”, will be off.

The VDM300 will communicate with the GUI while in the Idle Mode. The Idle Mode is achieved when Pins 3 and 14 of the DB-15 are left in a floating state (see Table 3-1). It is recommended that the VDM300 be put into Idle Mode during extended periods of downtime.

#### 3-2 Normal Mode

The VDM300 Normal Mode is the primary mode of operation. It is in this mode that the VDM300 will deliver water vapor on demand. There is, however, a sub-mode that occurs before the VDM300 reaches a Ready-to-Use (RTU) state in Normal Mode, and that sub-mode is referred to as Warm-up or Start-up. When it is desired that the VDM300 deliver water vapor, the VDM300 has to be prepared to do so. The Start-up sub-mode is what the VDM300 automatically goes into when the signal for normal operation is given by the user. Once it has reached the Ready-to-Use state, it is recommended that the VDM300 flow sensor be zeroed. The following sections will explain in greater detail the operation of the VDM300 in Normal Mode and the recommended process for zeroing the VDM300 flow sensor.

### 3-2-1 Start-up (Normal Mode)

When Pin 3 of the DB-15 on the VDM300 is grounded, the VDM300 goes into the Start-up sub-mode to prepare for Normal mode. Depending on the state of the VDM300 (temperature, water level, etc.) when the Normal mode signal is given, it will take between 5 and 55 minutes to complete the Start-up sub-mode. The Start-up sub-mode functions as follows:

1. Pin 3 of the DB-15 is grounded by the user: This signals the VDM300 to begin normal operation in the Normal mode. ***This pin must remain grounded to keep the VDM300 in Normal mode.***
2. The VDM300 checks the tank water level: The VDM300 will take one of two courses of action once the water level is determined:
  - A VDM300 that has an empty tank will open the MFC to the outlet fitting and evacuate the tank. ***A source of vacuum ( $\leq 200$  torr) at the outlet fitting needs to be provided for the tank evacuation to happen.*** The VDM300 will keep the MFC open to the outlet fitting for 90 seconds to insure that the tank is completely evacuated. Then it will close the MFC and open the water inlet valve to fill the tank with DI water. ***Make sure that the DI water source is connected and pressurized to 10-40 psig.***
  - A VDM300 that has been installed and has been previously operated on a tool could possibly have some amount of water in it. The VDM300 checks the water level in its tank and will fill it as needed.
3. DC Heater is turned on: The DC heaters will come on the moment that the Pin 3 of the DB-15 is grounded and begin heating the internal MFC to its nominal operating temperature.
4. AC tank heaters will come on when water is detected in the tank. The AC tank heaters will activate as soon as water is detected in the tank (water level  $>2$ ) and begin warming to nominal operating temperature.
5. The VDM300 completes the Start-up sub-mode: Completion of the Startup sub-mode occurs once all the proper operating conditions have been met. The proper operating conditions are as follows:
  - The water level in the tank is at normal operational level
  - The tank temperature is at operating set point and stable
  - The MFC temperature is at operating set point and stable

As stated previously the Start-up sub-mode can take from 5 to 55 minutes to complete. This is due to the fact that it takes some time for the VDM300 to reach operational temperature which is required for the proper delivery of water vapor. A VDM300 will require 55 minutes to complete the Start-up sub-mode when:

- It has just been installed; all internal temperatures will be at room ambience and the water tank will be empty
- It has been in Idle Mode or powered down for longer than 30 minutes (typically) and/or the water tank is empty

For most other situations, however, the VDM300 will compute a shorter time to complete the Start-up sub-mode. This computed time depends upon the deviation of the MFC temperature from its operational set point. Some example situations where the VDM300 will typically compute and execute a shortened Start-up sub-mode time are as follows:

- The VDM300 is put into drain mode to drain the water from the

## Brooks® VDM300 Vapor Delivery Module

---

tank and then put back into normal mode as soon as possible (typically less than 30 minutes)

- If the VDM300 is put into Idle mode temporarily (typically less than 30 minutes) and then put back into Normal mode
- If power to the VDM300 is lost or removed temporarily (typically less than 30 minutes) and the Normal mode signal is present when power is returned

6. The VDM300 outputs the Ready-to-Use signal(s). Once the VDM300 has completed the Start-up sub-mode, it will pull Pin 13 of the DB-15 to ground and turn the green “DEVICE READY” LED on. This indicates that it is in Normal Mode and ready to deliver water vapor on demand.

### 3-2-2 Ready-to-Use (Normal Mode)

---

When the VDM300 is in Normal Mode and has reached its Ready-to-Use condition, Pin 13 of the DB-15 is pulled to ground and the green “DEVICE READY” LED is on. The amber “WARM UP” LED will be flashing indicating that the internal temperatures (MFC and tank) are at set point and stable. The red “DEVICE FAULT” LED should be off. If the “DEVICE FAULT” LED is on, then proceed to Section 4 Maintenance & Troubleshooting.

At this time the VDM300 is ready to receive set points from the tool and begin delivering water vapor. The set point signal is received from the tool on Pin 8 of the DB-15. It needs to be a 0-5 Vdc analog signal. The signal is interpreted as a scale to represent the full scale flow range of the VDM300. As an example, a 3 slpm (3000 sccm) VDM300 would interpret a 2.5 Vdc set point from the tool as a command to flow 50% of full scale which would be 1.5 slpm (1500 sccm). When the VDM300 begins flowing water vapor at the given set point it will put out a flow signal from Pin 2 of the DB-15. This signal is an analog 0-5 Vdc signal scaled to represent the full scale flow range of the VDM300. As an example, a 3 slpm (3000 sccm) VDM300 would output a 2.5 Vdc signal if it were flowing at 50% of its full scale range, which would be 1.5 slpm (1500 sccm). The VDM300 will flow water vapor at 100% of its full scale range up to a maximum pressure of 200 Torr (26.66 kPa) at its outlet. It is important to make certain that the DI water supply is connected to the inlet and pressurized to 10-40 psig while the VDM300 is in Normal mode. This is required because the VDM300 will actively maintain a nominal DI water level in its tank by periodically refilling itself.

### 3-2-3 Zeroing the VDM300

---

Over a period of time the flow sensor in the VDM300 could accumulate a zero offset. It is recommended that the VDM300 flow sensor is zeroed if this occurs to ensure accuracy when delivering water vapor. There are two ways to zero the VDM300:

1. Using the “ZERO” momentary switch on the front cover
2. Using the BEST GUI

The following sections explain the manual zeroing procedure and how the Auto-Zero feature functions.

### 3-2-3-1 Procedure for Manually Zeroing the VDM300

As mentioned earlier, the VDM300 can be zeroed in one of two ways, either pressing the ZERO switch or issuing a command from the BEST. The manual procedure for zeroing the VDM300 with the switch or with the BEST is as follows:

1. The VDM300 must be in Normal mode and in its Ready-to-Use condition (green “DEVICE READY” LED on and amber “WARM UP” LED blinking). Pin 13 of the DB-15 will be pulled to ground.
2. The VDM300 must not have any fault conditions. The red “DEVICE FAULT” LED must be off and Pins 4 and 10 on the DB-15 must be in their nactive states.
3. There should have been no set point given to the VDM300 for at least 2 minutes.
4. The downstream external shutoff valve should be closed.
5. If the conditions in steps 1 through 4 have been met, then take one of the following steps:
  - Press and hold the “ZERO” momentary switch for 2 seconds and release
  - Issue the zero command from the BEST GUI.

Any non-zero output (flow sensor offset) from the VDM300 (“Flow Signal Out”, Pin 2, DB-15) should now be gone.

**It is highly recommended that a zero is performed when the VDM300 reaches Ready-to-Use condition after being put into Normal mode after every power cycle.**

### 3-3 Drain Mode

The Drain Mode is for emptying the VDM300 water tank. It is recommended to drain the tank when there will be extended periods of downtime for the VDM300.

To drain the VDM300, follow these instructions:

1. Provide a 0 sccm setpoint to the device.
2. Switch the source for the DI water inlet from DI Water to Nitrogen.  
**Make certain that the nitrogen supply is pressurized to between 10- 40 psig.**
3. Connect a 1/8" drain tube to the Tank Drain connector. The Instant Tube fitting is compatible with 1/8" O.D. tubing. A piece of Teflon tubing is supplied with the VDM300 to aid in routing the water to be drained to a suitable collection vessel.
4. Make certain that the drain has been routed to a suitable collection vessel. (600 ml volume)

#### **WARNING**

**The water to be drained is de-ionized water that could be at a temperature nearly as high as 100°C. Take the necessary precautions and wear appropriate personal protective equipment to avoid being burned by the hot water and/or steam from the heated water.**

## Brooks® VDM300 Vapor Delivery Module

---

5. The user needs to ground Pin 14 of the DB-15 to start the Drain mode. When the Drain mode is started the following takes place:
  - a. The water inlet valve will open for 1 minute to allow nitrogen into the water tank. This will pressurize the tank to the pressure level of the nitrogen supply (10-40 psig as required for proper operation).
  - b. The drain valve will then open allowing the water to be pushed out of the tank. When the tank is drained a short amount of time will be allowed to keep pushing nitrogen through the tank. This helps to ensure that as much water is drained from the tank as possible.
  - c. When the process is complete in 5 to 7 minutes (typical), the green "DEVICE READY" LED will blink, Pin 13 of the DB-15 will oscillate at 1Hz, and both water valves will be closed.
6. When the green "DEVICE READY" LED blinks and Pin 13 of the DB-15 oscillates at 1 Hz, the user needs to let Pin 14 of the DB-15 float (remove ground) to end the Drain Mode.

As stated above, the Drain mode process typically takes 5 to 7 minutes. This is dependent on the nitrogen supply pressure and the amount of water in the tank when the Drain Mode is initiated.

### 3-4 Operation of BEST for VDM300

---

All of the operations in Section 3 can be performed over the diagnostic port using the BEST GUI. Please reference the Brooks Expert Support Tool Software for Brooks Products manual (X-SW-BEST-eng).



## 4 Maintenance and Troubleshooting

### 4-1 Introduction


VDM300 maintenance is discussed below in three areas: Routine Maintenance, Troubleshooting and MFC Removal/Packing/Shipping.

### 4-2 Routine Maintenance

Any precision unit such as a vapor delivery module requires occasional servicing, especially if it has been operating for an extended period of time. It is recommended that you send the device to a Brooks Service Center for cleaning and recalibration at 12 month intervals.

Please follow the instructions for removal, product packaging and product return instructions found in Sections 4-6 thru 4-8.

All active process instrumentation and equipment is subject to aging and wear from their environment. This includes temperature, mechanical stress, component tolerance shift, contaminant buildup, oxidation, and other influences. The effects are gradual, but over time the changes can affect the accuracy of even the best equipment. Therefore, it is recommended to drain and refill the DIW tank every 3 months to prevent non-volatile contaminant build-up in the DIW tank and to re-zero the device at 6 month intervals as a minimum. Refer to Section 3-3 for draining instructions. Refer to Section 3-2-3 for re-zeroing instructions.

	<b>! WARNING</b>
<b>PRODUCT SEAL COMPATIBILITY</b>	
<b>It is recommended that the user check the product on a regular schedule to ensure that it is leak free as both metal and elastomeric seals, gaskets, O-rings and valve seats may change with age, exposure to process fluid, temperature, and /or pressure.</b>	

## Brooks® VDM300 Vapor Delivery Module

**⚠ WARNING**

If it becomes necessary to remove the instrument from the system, power to the device must be disconnected.

**⚠ CAUTION**

It is important that this device only be serviced by Brooks personnel

**⚠ CAUTION**

This instrument contains electronic components that are susceptible to damage by static electricity. Proper handling procedures must be observed during the removal, installation or other handling of internal circuit boards or devices.

### 4-3 Troubleshooting the VDM300

The VDM300 is not intended to be serviceable by the customer. In some instances, however, Brooks Field Service personnel or customers trained on the operation of the VDM can do basic diagnostic investigation and repair. This is limited to the power entry module, external cables, fittings, and software upgrades. In all other situations the unit will have to be removed from service and replaced.

There are two forms of troubleshooting the VDM300: general troubleshooting and using the BEST as a diagnostic tool. General troubleshooting is essentially making sure that the VDM300 is installed properly and that all required operating conditions are met. Section 4-4 explains some general troubleshooting guidelines for the VDM300 in greater detail. The VDM300 also has been designed to monitor its internal operating conditions and go into an alarm or fault condition if any of these conditions are out of specification. When the red "DEVICE FAULT" LED is on, the VDM300 has detected an internal problem. By using the BEST GUI, a field service person or a trained user can access this information. See Section 3-4 for information about using the BEST GUI and Section 4-5 for details about the troubleshooting information that can be accessed via BEST.

## 4-4 General Troubleshooting Guide

Refer to Table 4-1 for general troubleshooting information.  
 Some general troubleshooting steps to follow are

Table 4-1 General Troubleshooting Information and Courses of Action

Problem	Possible Cause	Course of Action
VDM300 will not power up; LEDs on front of VDM300 not on; not responding to end user command signals.	DC power through the DB-15 not on or not meeting specification.	Make certain that $\pm 15$ Vdc supply is on; check with multimeter to verify that DC power meets specifications ( $\pm 15$ Vdc $\pm 5\%$ tolerance).
	DB-15 cable pin assignment on user side not correct.	Refer to Table 2-1 of the VDM300 manual for DB-15 pin assignment; make corrections as necessary.
	Other	Contact Brooks technical support
Red "DEVICE FAULT" LED is on; Pin 10 of the DB-15 (System Error Alarm) is in its active state.	The VDM 300 has detected a fault condition.	Use the Brooks GUI diagnostic capabilities for the VDM300 (see Section 4-5 of the VDM300 manual for details).
		Contact Brooks technical support
Offset between setpoint and flow signal	Device not zeroed	Zero the device using instructions in Section 3-2-3
Tank will not fill after drain cycle	Tank under pressure	Evaluate tank using start-up procedure in section 3-2-1 or utilize BEST GUI to manually purge MFC control valve.
Water leaking from device	Loose fittings, cracked tubing	Remove water supply, power down unit, disconnect and return to Brooks Instrument

1. Verify all installation steps have been performed as outlined in previous sections of this manual.
2. Verify that the AC fuse and all electrical connections to the VDM300 meet the specifications explained in previous sections of this manual.
3. Make sure all fittings and connections to the VDM300 are secure.
4. Verify that all operating conditions of the system in which the VDM300 is installed have been met for proper operation
  - a. proper fluid for current desired mode of operation
  - b. fluid supply pressure and flow
  - c. outlet pressure

If these steps do not correct the problem, contact Brooks technical support for further assistance.

Brooks® VDM300 Vapor Delivery Module

4-5 Using BEST as a Diagnostic Tool

Detailed Instructions on monitoring warnings and alarms for the VDM300 can be found in the installation and operations manual, titled “Brooks Expert Support Tool (BEST) Software for Brooks Devices” (X-SW-BEST-eng). Reference Chapter 8, Monitoring. The following table provides a description of the alarm codes along with potential causes and corrective actions.

Table 4-2 List of Possible Alarm Codes Detected by the VDM300

Alarm Code	Alarm Condition	Cause(s)	Course of Action	Recovery Procedure
1	Ready-to-Use signal not set in the allotted time.	<p>General: The proper operational conditions were not met in the time allotted for a normal start up.</p> <p>1 The water tank did not reach operating temperature (AC Heaters).</p> <p>2. The flow controller did not reach operating temperature.</p> <p>3. The normal operational water level in the tank was not achieved.</p>	<p>General: Follow the instructions below. If the alarm condition can be corrected per the instructions, perform the necessary operation and then proceed to the Recovery Procedure. If the alarm condition cannot be corrected per the instructions below, contact Brooks for technical support.</p> <p>1. A Make sure the AC switch is in the on position.</p> <p>B. Check the fuses located in the power entry module.</p> <p>C. Make sure the power entry module is supplied with specified AC supply voltage.</p> <p>2. Verify that the DC power is within <math>\pm 5\%</math> of specification.</p> <p>3. Make sure the water supply is on and at the proper pressure.</p>	<p>If the cause of the alarm condition is corrected, put the VDM in the Normal Operation mode and wait the required time for the Ready-to-Use signal to be sent by the VDM.</p> <p><b>NOTE:</b> This time could be a maximum of 55 minutes depending on the original cause for the alarm condition.</p>
2	Water level in vaporizer chamber cannot be determined.	Water level sensing mechanism/circuitry has failed.	Contact Brooks technical support.	N/A

Table 4-2 List of Possible Alarm Codes Detected by the VDM300 (continued)

Alarm Code	Alarm Condition	Cause(s)	Course of Action	Recovery Procedure
4	Vaporizer chamber has been overfilled (soft alarm condition) Pin 4 of the DB-15 has gone active.	General: The water level in the vaporizer chamber has become too high, but can still be operated. The alarm condition should be corrected as soon as possible.  1. The DI Water supply pressure is higher than the specified pressure range and forcing a leak through the water inlet valve.  2. Inlet water valve has failed and is allowing leak-through.  3. Faulty level sensor.	General: Follow the instructions below. If the alarm condition can be corrected per the instructions, perform the necessary operation and then proceed to the Recovery Procedure. If the alarm condition cannot be corrected per the instructions below, contact Brooks for technical support.  1. Verify and/or correct the DI water supply pressure so that it is within the specified pressure range. Follow the procedure in the manual to put the VDM into Drain mode. When the drain is completed, put the VDM into normal operation mode.  2. Contact Brooks for technical support.  3. Contact Brooks for technical support.	If the VDM is no longer in an over-filled condition, the alarm condition will no longer be present. If step 1 from the "Course of Action" column was followed, the VDM should already be in normal operation mode, and it will take up to 55 minutes for the VDM to output the Ready-to-Use signal.
4	Vaporizer chamber has been overfilled (hard alarm condition)	General: The water level in the vaporizer chamber has become critically too high and should no longer be operated until the alarm condition has been corrected.  1. The DI water supply pressure is higher than the specified pressure range and forcing a leak through the water inlet valve.  2. Inlet water valve has failed and is allowing leak-through.	General: Follow the instructions below. If the alarm condition can be corrected per the instructions, perform the necessary operation and then proceed to the Recovery Procedure. If the alarm condition cannot be corrected per the instructions below, contact Brooks for technical support.  1. Verify and/or correct the DI water supply pressure so that it is within the specified pressure range. Then follow the procedure in the manual to put the VDM into Drain mode. When the drain is completed, put the VDM into normal operation mode.  2. Contact Brooks for technical support.	If the VDM is no longer in an over-filled condition, the alarm condition will no longer be present. If step 1 from the "Course of Action" column was followed, the VDM should already be in normal operation mode, and it will take up to 55 minutes for the VDM to output the Ready-to-Use signal.

Table 4-2 List of Possible Alarm Codes Detected by the VDM300 (continued)

Alarm Code	Alarm Condition	Cause(s)	Course of Action	Recovery Procedure
16	Water tank temperature is below normal operation temperature.	<ol style="list-style-type: none"> <li>1. The AC switch is off.</li> <li>2. Input voltage is incorrect.</li> <li>3. The AC fuses have blown.</li> <li>4. The AC supply voltage is not reaching the power entry module.</li> <li>5. The thermal cutoff on the heater circuit is open due to over temperature condition.</li> </ol>	<ol style="list-style-type: none"> <li>1. Make sure the AC switch is in the on position.</li> <li>2. Make sure the power entry module is configured for the proper AC supply voltage; follow the procedure outlined in the manual.</li> <li>3. Replace the fuses in the power entry module. <b>NOTE:</b> Make certain that the reason the fuses have blown has been corrected.</li> <li>4. Check the AC supply voltage and correct as necessary.</li> <li>5. Return unit to Brooks Instrument for repair.</li> </ol>	<p>If the instructions from the "Course of Action" column have corrected the cause for the alarm condition, it is possible the alarm condition is already gone and normal operation can be resumed immediately. If this is not the case, then put the VDM into normal operation mode and wait the required time for the Ready-to-Use signal to be sent by the VDM.</p> <p><b>NOTE:</b> The amount of time required for this recovery could be from as little as 5 minutes to 55 minutes depending on how long the VDM was left in standby mode or powered down while trying to correct the cause for the alarm condition.</p>
32	Water tank temperature is above normal operational temperature.	Internal VDM failure.	This failure mode is due to some internal failure of the VDM. Contact Brooks for technical support.	NIA
64	Flow controller temperature is below normal operational limit.	<p>Supplied DC voltage is below specified limits.</p> <p>Internal VDM failure.</p>	Verify that the DC supply voltages are within $\pm 5\%$ of the specified requirement, and adjust as necessary. If the DC supply voltages are within the specified requirements, then there is a possible internal device problem and Brooks technical support should be contacted.	<p>If the instructions from the "Course of Action" column have corrected the cause for the alarm condition, it is possible the alarm condition is already gone and normal operation can be resumed immediately. If this is not the case, then put the VDM into normal operation mode and wait the required time for the Ready-to-Use signal to be sent by the VDM.</p> <p><b>NOTE:</b> The amount of time required for this recovery could be from as little as 5 minutes to 55 minutes depending on how long the VDM was left in standby mode or powered down while trying to correct the cause for the alarm condition.</p>

Table 4-2 List of Possible Alarm Codes Detected by the VDM300 (continued)

Alarm Code	Alarm Condition	Cause(s)	Course of Action	Recovery Procedure
128	Flow controller temperature is above the normal operational limit.	Supplied DC voltage is above specified limits.  Internal VDM failure.	Verify that the DC supply voltages are within $\pm 5\%$ of the specified requirement, and adjust as necessary. If the DC supply voltages are within the specified requirements, then there is a possible internal device problem and Brooks technical support should be contacted.	If the instructions from the "Course of Action" column have corrected the cause for the alarm condition, it is possible the alarm condition is already gone and normal operation can be resumed immediately. If this is not the case, then put the VDM into normal operation mode and wait the required time for the Ready-to-Use signal to be sent by the VDM.  <b>NOTE:</b> The amount of time required for this recovery could be from as little as 5 minutes to 55 minutes depending on how long the VDM was left in standby mode or powered down while trying to correct the cause for the alarm condition.
512	Drain Circuit Error	Drain valve circuit has not operated as expected. Internal VDM failure.	Contact Brooks technical support.	N/A
1024	Fill Circuit Error	Inlet water valve circuit has not operated as expected. Internal VDM failure.	Contact Brooks technical support.	N/A
2048	Failure to drain The VDM has failed to drain the water in the tank within the required time.	1. N2 supply pressure is too low.  2. Line connected to VDM inlet was not switched over to N2 supply.  3. Inlet or outlet water valve failure.	1. Verify that N2 supply pressure is within specified requirements and adjust as necessary.  2. Switch supply line to VDM inlet to N2 supply  3. Internal VDM Failure; contact Brooks technical support.	If step 1 or 2 from the "Course of Action" column has corrected the cause for the alarm condition, then put the VDM into drain mode and resume standard operating procedures. The amount of time to recover from the alarm and return the VDM to a Ready-to-Use state will be the time required to correct the cause for the alarm condition plus up to 55 minutes from the time that the VDM is placed in to normal operation mode.

Brooks® VDM300 Vapor Delivery Module

Table 4-2 List of Possible Alarm Codes Detected by the VDM300 (continued)

Alarm Code	Alarm Condition	Cause(s)	Course of Action	Recovery Procedure
4096	Tank has gone dry under normal operation mode.	1. Water supply pressure is below specified requirements. 2. Inlet water valve failure.	1. Verify that the water supply pressure is within specified requirement and adjust as necessary. 2. Internal VDM failure; contact Brooks technical support.	If step 1 from the "Course of Action" column has corrected the cause for the alarm condition, then put the VDM into normal operation mode. The amount of time to recover and return the VDM to a Ready-to-Use state will be up to 55 minutes.
32768	No reading from level switch	Tank level switch cable is defective or not connected	Return to Brooks Instrument	

The following table provides a list of the possible alarms for a set of defined Pinout Option/ CSR combinations and output pin signals. Utilize the Brooks' BEST GUI to determine the signals on output pins 4, 10 & 13.

G = Ground  
H = High Voltage (Depends of Pin 1 input voltage)

Pinout Option/ CSR	Pin Signals			Possible Alarm(s)									
	4	10	13	No Alarm	1	4	16	32	64	128	2048	4096	32768
...NXXXX	G	G	G				X	X	X	X		X	X
	G	G	H		X						X		
	G	H	G										
	G	H	H	X									
	H	G	G			X							
	H	G	H										
	H	H	G										
...N1202	G	G	G	X									
	G	G	H										
	G	H	G				X	X	X	X		X	X
	G	H	H		X						X		
	H	G	G										
	H	G	H			X							
	H	H	G										
...LXXXX	G	G	G									X	
	G	G	H		X								
	G	H	G	X									
	G	H	H										
	H	G	G				X	X	X	X			X
	H	G	H								X		
	H	H	G			X							
...L1201 or L1251	G	G	G	X									
	G	G	H										
	G	H	G									X	
	G	H	H										
	H	G	G			X							
	H	G	H										
	H	H	G				X	X	X	X			X

Sample Model Code

I	II	III	IV	V	VI	VII	VIII	IX
VDM3	W	3000	A	1	A	1	L	XXXX



## 4-6 VDM300 Removal

---

- Drain system according to section 3-3
- Turn off tank heater
- Remove electrical connections
- Let cool for 1 hour.
- Remove process connections and tank drain
- Unbolt and remove from system

## 4-7 VDM300 Packaging

---

- Use double-walled boxes for heavier items.
- If reusing a box, remove all old labels, and make sure it's high-quality, with no holes, tears, or dents.
- Choose cushioning with enough density to keep items from shifting.
- All units are to be packaged separately
- Both the SDS and the Decontamination Statement are to be attached to the OUTSIDE of the shipping container.

## 4-8 VDM300 Shipping

---

Prior to returning any device to the factory, visit the Brooks web site ([www.BrooksInstrument.com](http://www.BrooksInstrument.com)) for a Return Materials Authorization Number (RMA#), or contact one of the locations provided on [www.brooksinstrument.com/globalsupportcenters](http://www.brooksinstrument.com/globalsupportcenters) prior to returning the device, it must be drained and purged in accordance with Section 4-6.

All flow devices returned to Brooks require completion of the Brooks Instrument Decontamination Statement, along with a Safety Data Sheet (SDS) for the fluid(s) used in the instrument. Failure to provide this information will delay processing by Brooks personnel. Copies of these forms can be downloaded from the Brooks website ([www.BrooksInstrument.com](http://www.BrooksInstrument.com)) or are available from any of the Brooks Instrument locations provided on p. 2-1, [www.brooksinstrument.com/globalsupportcenters](http://www.brooksinstrument.com/globalsupportcenters)

## 5 VDM300 Product Description Code

The following Product Description Code (PDC) identifies the VDM300 and its optional features. This code is used to order the product. Call your Brooks sales representative if you need assistance.

Table 5-1 VDM Product Description Code

Code Description	Code	Code Description
<b>I.</b> Base Model Code	<b>VDM3</b>	Vapor Delivery Module
<b>I.</b> Fluid	<b>W</b>	DI Water
<b>III.</b> Flow Range	<b>3000</b>	3000 sccm
<b>IV.</b> Supply Voltage	<b>A</b>	208-230 Vac, 50/60 Hz
<b>V.</b> Fluid Inlet Fitting	<b>1</b>	1/4" VCR Male
	<b>2</b>	1/4" Tube Compression
<b>VI.</b> Vapor Outlet Fitting	<b>A</b>	3/8-1/2" VCR Male
<b>VII.</b> Mounting	<b>1</b>	Standard Backplate
<b>VIII.</b> Pinout Options	<b>L</b>	With Low Level Alarm
	<b>N</b>	Without Low Level Alarm
<b>IX.</b> Customer Special Request	<b>XXXX</b>	CSR Number

Note: Devices will ship with latest firmware unless otherwise specified.

### Sample Model Code

I	II	III	IV	V	VI	VII	VIII	IX
VDM3	W	3000	A	1	A	1	L	XXXX

## Brooks® VDM300 Vapor Delivery Module

## Bulgarian

### Основни инструкции Прочетете преди работа!

Brooks Instrument проектира, произвежда и тества продуктите си по такъв начин, че те да отговарят на многобройни национални и международни стандарти. Тези оборудвания трябва правилно да се инсталират, експлоатират и поддържат за да се гарантира, че ще могат да работят съответно на техните нормални спецификации. Следващите инструкции трябва да се спазват и трябва да се включат в програмата за безопасност на труда при инсталирането, експлоатацията и поддръжката на продуктите на Brooks Instrument.

- За да се гарантира характерната производителност, инсталирането, експлоатацията, актуализирането, програмирането и поддръжката на продукта трябва да се извършват само от квалифициран персонал.
- Прочетете всички инструкции преди инсталирането, експлоатацията и поддръжката на продукта. Ако това ръководство не е съответстващото издание, вижте на задната обложка информацията за контакт с местния търговски офис. Запазете това ръководство за по-късно информиране.

**▲ ВНИМАНИЕ: Не работете с оборудването извън диапазоните, указани в инструкцията и ръководството по експлоатация.**

**Неизпълнението на това може да доведе до сериозни телесни повреди и / или повреждане на оборудването.**

- Ако не разбирате някои инструкциите, свържете се с представителя на Brooks Instrument за изясняване на проблема.
- Спазвайте всички предупреждения, призови и инструкции означени върху оборудването или доставени заедно с него.

**▲ ПРЕДУПРЕЖДЕНИЕ: Преди инсталацията се убедете, че този инструмент притежава необходимите одобрения за съответствие на местните и националните кодове. Неспазването на това предупреждение може да доведе до сериозни травми и/или повреда на оборудването.**

- Инсталирайте оборудването съответно на указанията в инструкцията за инсталиране и на действащите на местни и национални предписания. Свързвайте продуктите само към подходящи източници на електричество и налягане.
- **Ход: (1)** Бавно въведете системата под налягане. Бавно отворете работните клапани за да се избегнат колебанията на потока. **(2)** Проверете дали няма изтичане при входното и изходното съединение на разходомера. Ако няма изтичане, напълнете системата до работно налягане.
- Преди извършване на поддръжката непременно проверете дали работният тръбопровод не се намира под налягане. Ако са необходими резервни части, с определените от Brooks Instrument резервни части трябва да борава само квалифициран персонал. Неразрешените части и процедури могат да окажат влияние върху работата на продукта, и също да застрашат безопасността на експлоатацията. Заместването с неоригинални части може да доведе до пожар, опасност от токов удар или неправилна работа.
- Всички врати на оборудването непременно да бъдат затворени, а защитните покрития да бъдат на мястото си, за да се избегнат токовите удари и телесните повреди, освен ако квалифицирани специалисти извършват работи по неговото поддръжане.

**▲ ВНИМАНИЕ: При оборудването с протичащи течности, ако по някаква причина е необходимо да се затворят намиращите се до оборудването изходни и входни клапани, оборудването трябва напълно да се изпразни. Неизпълнението на това може да причини топлинно разширение на течността, което може да спуга оборудването и да доведе до телесни повреди.**

### Европейска директива за уреди под налягане (PED)

Всички съоръжения под налягане с вътрешно налягане над 0,5 bar (g) и с размер по-голям от 25 mm или 1" (inch), попадат под действието на европейската директива за уреди под налягане (PED).

- Глава „Технически данни“ на настоящото ръководство съдържа свързаните с директивата PED инструкции.
- Указаните в настоящото ръководство продукти съответстват на европейската директива 2014/34/EU.
- Всички разходомери на Brooks Instrument се отнасят към флуиди от група 1.
- Продуктите по-големи от 25 mm или 1" (inch) съответстват на I, II или III категория според PED.
- Продуктите с размери 25 mm или 1" (inch), или по-малки, следват добрата инженерна практика (SEP).

### Европейска директива за електромагнитна съвместимост (EMC)

Носещото знака CE (електрическо/електронно) оборудване на Brooks Instrument е изпълнило успешно тестовете за проверка на изискванията за електромагнитна съвместимост (директива EMC 2014/30/EU).

Особено внимание трябва да се обърща обаче на избирането на сигналните кабели, използвани с оборудването, носещо знака CE.

**Качество на сигналните кабели, кабелните салници и съединители:**

Brooks Instrument предлага висококачествени кабели, отговарящи на изискванията на CE сертификацията.

Ако използвате собствен сигнален кабел, трябва да изберете такъв, който е напълно защитен със 100%-ово екраниране.

Съединителите тип „D“ или „кръгов“ трябва да бъдат екранирани с метален щит. При необходимост за фиксирането на щита на кабела трябва да се използват метални кабелни салници.

Щитът на кабела трябва да се свърже с металното покритие или металния салник и в двата края да се екранира в 360°. Щитът трябва да бъде заземен.

Съединителите за печатни платки са стандартно неметални. Използваните кабели трябва да бъдат защитени със 100%-ово екраниране, за да отговарят на CE сертификацията.

Щитът трябва да бъде заземен.

Конфигурация на контактите: Виж приложената инструкция за експлоатация.

### Електростатичен разряд (ESD)

**▲ ВНИМАНИЕ: Приборът съдържа електронни компоненти, които са чувствителни към статичното електричество и могат да се повредят от него. Трябва да се спазват съответните процедури по време на изваждане, слагане или друго боравене с вътрешните монтажни платки и устройства.**

**Процедура за работа:**

1. Изключете оборудването.
2. Персоналът трябва да се заземи с гривна или друго безопасно и подходящо за целта средство, преди да инсталира, изважда или регулира монтажна платка или друго вътрешно устройство.
3. Печатните монтажни платки трябва да се транспортират в проводяща опаковка. Печатните платки могат да се изваждат от защитното покритие само непосредствено преди инсталирането. Отстранените печатни платки незабавно трябва да се сложат в защитна опаковка, служеща за транспортиране, складиране или връщане на производителя.

**Забележки:**

Не е уникално явление, че този прибор съдържа чувствителни към електростатичния заряд (ESD) компоненти. Болшинството от съвременните електронни прибори съдържат компоненти, изготвени по технология метал-окис (NMOS, SMOS и т.н.). Опитът доказва, че даже и малко количество статическо електричество може да повреди или съсипе тези прибори. Повредените компоненти даже ако привидно работят правилно, проявяват начални неизправности.

## Czech

## Základní instrukce

### Před instalací si přečtěte následující instrukce!

Společnost Brooks Instrument konstruuje, vyrábí a testuje tento produkt tak, aby splnil mnoho národních a mezinárodních standardů. Přístroje musí být řádně nainstalovány, používány a udržovány tak, aby byl zajištěn jejich nepřetržitý provoz v rámci normálních technických specifikací. Musíte dodržovat následující pokyny a integrovat jejich obsah do svého bezpečnostního programu při instalování, používání a udržování produktů společnosti Brooks.

- Pro zajištění správné funkce zařízení mohou jeho instalaci, obsluhu, programování, údržbu a aktualizace firmwaru provádět výhradně kvalifikované osoby.
- Před instalací, provozem a údržbou produktu si prostudujte všechny pokyny. Pokud tato příručka není tou správnou příručkou pro dané zařízení, informujte se na zadní straně obálky o kontaktu na místní prodejní kancelář. Uchovejte si tuto příručku pro pozdější potřebu.

**▲ UPOZORNĚNÍ: Neprovozujte zařízení v rozsahu mimo daný rozsah v provozní příručce. Porušení tohoto upozornění může mít za následek vážné újmy na zdraví a vést k poškození zařízení.**

- Pokud některým pokynům nerozumíte, kontaktujte svého prodejního zástupce společnosti Brooks a vyžádejte si objasnění.
- Dodržujte všechny výstrahy, upozornění a pokyny, uvedené a vyznačené na produktu, nebo s ním dodané.

**▲ VAROVÁNÍ: Před instalací proveďte, zda má tento přístroj požadované schválené parametry splňující místní a národní předpisy. Nedodržení tohoto varování může způsobit vážnou újmu na zdraví osob a/nebo poškození zařízení.**

- Namontujte zařízení specifikovaným způsobem podle správné montážní příručky a podle platných místních a národních předpisů. Připojte všechny produkty ke správným zdrojům elektrické energie a stlačených médií.
- Postup: (1) Pomalu do systému přivádějte médium. Pro zabránění vzniku rázů v systému otvírejte procesní ventily postupně. (2) Překontrolujte těsnost vstupního a výstupního připojení průtokoměru. Pokud nezjistíte žádné netěsnosti, postupně zvedejte tlak na provozní hodnotu.
- Před prováděním servisních prací zkontrolujte, zda systém není pod tlakem. V případě potřeby výměny dílů zajistěte, aby byly použity náhradní součásti specifikované společností Brooks Instrument a výměnu prováděla kvalifikovaná osoba. Použití neschválených dílů a postupů může negativně ovlivnit efektivitu a bezpečnost procesu. Použití náhrad za originální díly může způsobit požár, úraz elektrickým proudem nebo nesprávnou funkci.
- Pokud není zrovna prováděna údržba kvalifikovanou osobou, ujistěte se, že zařízení je opatřeno všemi předepsanými kryty.

**▲ UPOZORNĚNÍ: Pokud je u zařízení s průtokem kapalin nutno z jakéhokoli důvodu uzavřít vstupní a výstupní ventily, je nutné zařízení kompletně vyprázdnit. Pokud tak neučiníte, může z důvodu teplotní roztažnosti zbytků média v zařízení dojít k jeho poškození nebo k ohrožení zdraví osob.**

### Evropská směrnice pro tlakové zařízení (PED)

Na veškerá tlaková zařízení s vnitřním tlakem vyšším než 0,5 baru (g) a velikosti větší než 25 mm nebo 1" (palec) se vztahuje platnost směrnice o tlakovém zařízení (PED).

Kapitola „Technické údaje“ v této příručce obsahuje důležité bezpečnostní a provozní pokyny související se směrnicí PED.

- Produkty popsané v této příručce jsou v souladu se směrnicí EN 2014/34/EU.
- Všechny průtokoměry společnosti Brooks Instrument spadají do rámce Kapaliny, skupina I.
- Produkty větší než 25 mm nebo 1" (palec) jsou v souladu se směrnicí PED, kategorií I, II nebo III
- Produkty s velikostí 25 mm nebo 1" (palec) a menší spadají do rámce Správných technických postupů (SEP).

### Evropská směrnice pro elektromagnetickou kompatibilitu (EMC)

Elektrické/elektronické zařízení Brooks Instrument nesoucí značku CE bylo úspěšně testováno dle předpisů pro elektromagnetickou kompatibilitu (směrnice EMC č. 2014/30/EU).

Výběru signálních kabelů pro použití se zařízením označeném CE je nutné věnovat zvláštní pozornost.

**Kvalita signálních kabelů, kabelových průchodků a konektorů:**

Brooks Instrument dodává vysoce jakostní kabely splňující požadavky kvalitativního zařazení CE. Pokud chcete použít vlastní signální kabely, zvolte typy s kvalitním stíněním všech žil a v celé délce trasy.

V případě použití konektorů kruhových nebo tvaru „D“, musí mít tyto kovové stínění. V případě jejich použití, musí kovové kabelové průchodky být propojeny se stíněním kabelu.

Stínění by mělo být připojené ke kovovému tělesu přístroje nebo krytu, na obou koncích kabelu a po celém jeho obvodu.

Stínění by mělo být uzemněno.

Připojky vedoucí ke kartám podle norem jsou nekovové. Pro splnění požadavků předpisů CE musí být použité kabely kompletně stíněny.

Stínění by mělo být uzemněno.

Konfigurace kontaktů je uvedena v příloženém návodu k obsluze.

### Elektrostatický výboj (ESD)

**▲ UPOZORNĚNÍ: Tento přístroj obsahuje komponenty citlivé na poškození statickou elektřinou. Při montáži, demontáži či jiné manipulaci s vnitřními elektronickými obvody je potřeba dodržovat příslušné postupy.**

**Postup ošetřování:**

1. Odpojte přístroj od napájení.
2. Osoba provádějící údržbu má být při instalaci, vyjímání či práci na desce plošných spojů nebo jiné vnitřní elektronice uzemněna zemnicím náramkem, nebo jiným vyhovujícím způsobem.
3. Desky plošných spojů je nutné přepravovat v elektricky vodivém obalu. Plošné spoje vyjmejte z vodivého obalu až bezprostředně před instalací do přístroje! Plošné spoje vyjmuté z přístroje a určené pro další využití, opět neprodleně umístěte do ochranného obalu.

**Poznámky:**

Existence prvků, citlivé na elektrostatické výboje (ESD) v přístrojích je častým jevem. Prvky s technologií oxidu kovů (NMOS, SMOS) jsou používány u většiny moderních elektronických zařízení. Zkušenosti dokazují, že i jen malé elektrostatické výboje mohou poškodit nebo zničit tyto zařízení. U poškozených součástek, jakkoli zdánlivě pracujících bezchybně, dochází brzy k poruše.

## Brooks® VDM300 Vapor Delivery Module

## Dansk

### Grundlæggende vejledninger Læs disse før anvendelse!

Brooks Instruments designer, fremstiller og afprøver sine produkter således, at de tilpasser sig både de indenrigs og internationale standarder. Disse udstyr bør installeres, bruges og repareres omhyggeligt, så de kan virke tilsvarende deres normale anvendelsesperiode. De følgende regler skal overholdes og implementeres under installationen samt ved brug og reparation.

- For at garantere den passende kapacitet, er udstyrets installation, anvendelse, opdatering, programmering kun tilladt for kvalificeret personale. Alle vejledninger skal læses før produktets installation, anvendelse og reparation.
- Hvis denne manual ikke er den passende udgave, kontakt venligst jeres leverandør for yderligere information.
- Det anbefales at gemme denne manual for senere brug.

**▲ OBS.: Udstyret må ikke anvendes til andet end det er angivet i brugsanvisningen. Hvis denne regel brydes, kan der forekomme alvorlige personskader eller brist på udstyret.**

Hvis vejledningerne ikke er forståelig, kontakt venligst Deres Brooks repræsentant for at afklare problemet som er opstået.

- Overhold alle regler, som er markeret eller leveret sammen med udstyret.

**▲ ADVARSEL! Før ibrugtagning/installation skal det kontrolleres, at det ihændværende instrument opfylder de lokale og nationale sikkerhedskrav. Hvis denne advarsel ignoreres, kan det resultere i alvorlig personskade og/eller skader på instrumentet.**

- Installer udstyret efter den angivne installationsvejledning og gældende lovgivning for anvendelsesområde. Udstyret må kun tilsluttes med kabler og stik som overholder kravspecifikationerne i vejledningen.
- Ibrugtagning: (1) Åbn langsomt for trykket i systemet. Åbn langsomt for alle procesventiler for at forhindre ustabil gas flow. (2) Tjek systemet for lækage ved tilsluttet måleinstrumenter, samlinger og andet tilsluttet udstyr. Derefter øg trykket i systemet indtil arbejdsstrykket er opnået.
- Før reparation tjek altid at procesledningen ikke står under tryk. Hvis der er brug for at udskifte defekte dele må kun kvalificeret personale udføre arbejdet og af sikkerhedsmæssige årsager må der kun anvendes originale Brooks reservedele. Det er ikke tilladt at anvende reservedele eller udføre arbejde der på nogen måde kan ændre produktet fra dens oprindelige specifikationer. Manglende overholdelse af de foreskrevne procedurer kan resultere i brænd, og fare for elektrisk stød eller kortslutning.
- Af sikkerhedsmæssige årsager sørg for at alle sikkerhedsforanstaltninger er overholdt. Eksempelvis at alle afskærmninger eller anden form for installationsbeskyttelse er lukket eller installeret ved normal drift.

**▲ Advarsel.: Ved brug af udstyr som anvendes til væske skal det sikres at indgangsventilen og udgangsventilen ikke bliver lukket på samme tid i forbindelse med aftapning. Såfremt dette ikke overholdes, er der risiko for at væsken på grund af varmeudvikling ekspanderer og dette kan forårsage skade på udstyr og personer.**

### Det Europæiske direktiv for trykudstyr (PED)

På alt udstyr hvis indgangstryk er større end 0,5bar (g) og større end 25 mm eller en tomme, gælder det europæiske direktiv for trykapparater. Manualens afsnit "tekniske data" indeholder anvisninger om PED direktivet.

- I manualen angives instrumenter der er tilpasset direktiv 2014/34/EU.
- Alle Brooks gennemstrømningsmålere tilhører væskegruppe nr. 1.
- Alle instrumenter som er større end 25 mm eller en tomme beskrives i direktivet PED's kategorier I, II eller III.
- Alle instrumenter som er på 25 mm eller en tomme, eller mindre, beskrives i Sound Engineering Practice (SEP).

### Det europæiske direktiv for elektromagnetisk kompatibilitet (EMC)

Alle Brooks instrumenter (elektrisk/elektronisk) som har CE markering er godkendt og testet ifølge om elektromagnetiske kompatibilitets forskrifter (EMC direktiv 2014/30/EU).

OBS: Man skal være opmærksom på hvilken type kabler der bruges til CE mærket udstyr..

#### Om kvalitet af signalkabler, kabelti slutninger og koblinger:

Brooks tilbyder kabler af højest kvalitet, som er tilpasset CEE kvalificeringens forskrifter. Hvis man vælger at bruge egne kabler, skal man vælge et kabel som har den nødvendige afskærmning for at sikre 100 % mod udefra kommende støj.

Ti slutningerne "D" eller rundformede ti slutninger skal være afskærmet med skal af metal.

Stikket skal være afskærmet på alle sider. Al afskærmning skal jordes..

Card Edge ti slutninger er ifølge standarden ikke metalliske.. De anvendte kabler og stik skal være 100 % afskærmet for at opfylde CE kravene.. De skal ligeledes jordes.

For stik konfigurationen se vedlagte brugsvejledning.

### Elektrostatisk afladning (ESD)

**▲ OBS.: Udstyret indeholder tilbehør som kan skades ved elektrostatisk elektricitet. Alle forskrifter skal overholdes ved kontakt med alle elektriske komponenter både under drift og vedligeholdelse..**

#### Behandlingsproceduren:

1. Sluk for al strømtilførsel til udstyret.
2. Personer som skal i kontakt med udstyret skal være jordet eller bære anden form for elektrisk beskyttende udstyr. Manglende overholdelse af dette kan medføre skader på alle elektriske komponenter.
3. Alle elektriske komponenter skal opbevares eller transporteres i deres originale indpakning for at sikre komponenter mod statiske elektriske skader. Emballagen må ikke åbnes før komponenten skal installeres i udstyret. Ved afslutning af vedligeholdelse/reparation af udstyret, skal udstyret installeres med det samme eller pakkes forsvarligt hvis det skal på lager eller transporteres.

#### Bemærkninger:

Dette udstyr er ikke unik i den hensigt, at det indeholder for elektrostatisk afladning (ESD) sensitive reservedel. I de fleste elektronisk udstyr findes der metaloxyd teknologiske reservedel (NMOS, SMOS m.m.). Erfaringerne viser at selv den mindste statiske elektricitet kan skade, eller ødelægge disse instrumenter. Selv en fungerende elektrisk del kan have levetiden markant reduceret på grund af statisk elektricitet..

# Installation and Operation Manual

X-VAP-VDM300-eng

Part Number: 541B210AAG

October, 2018

Brooks® VDM300 Vapor Delivery Module

## Dutch

### Essentiële instructies

#### Lees ze voordat u verder gaat!

Brooks Instrument ontwerpt, produceert en test haar producten zodanig dat ze voldoen aan vele nationale en internationale normen. Deze producten moeten correct worden geïnstalleerd, bediend en onderhouden zodat ze binnen hun normale specificaties blijven werken. De volgende instructies moeten worden toegevoegd aan en geïntegreerd in uw veiligheidsprogramma als u producten van Brooks Instrument installeert, bedient en onderhoudt.

- Om de juiste prestaties te kunnen garanderen mag alleen gekwalificeerd personeel het product installeren, bedienen, updaten, programmeren en onderhouden.
- Lees alle instructies voordat u het product gaat installeren, bedienen en onderhouden. Als dit niet de juiste handleiding is, kijk dan op de achterzijde voor contactinformatie van uw vertegenwoordiger. Bewaar deze handleiding voor later.

**▲ WAARSCHUWING: gebruik dit instrument niet als niet is voldaan aan de specificaties in de handleiding. Het niet naleven van deze waarschuwing kan ernstig letsel en/of schade aan de apparatuur tot gevolg hebben.**

- Als u één of meer instructies niet begrijpt, vraag dan om uitleg aan uw vertegenwoordiger van Brooks Instrument.
- Neem alle waarschuwingen, voorschriften en instructies in acht die op het product zijn aangebracht of bij het product zijn geleverd.

**▲ WAARSCHUWING: Zorg ervoor dat dit instrument de vereiste goedkeurings-classificatie heeft om te voldoen aan de lokale en nationale standaarden, voordat u het gaat installeren. Het niet naleven van deze waarschuwing kan ernstig letsel en/of schade aan de apparatuur tot gevolg hebben.**

- Installeer uw apparatuur volgens de instructies in de bijgeleverde handleiding en in overeenstemming met de geldende lokale en nationale voorschriften. Sluit alle producten aan op de juiste elektrische voedings- en drukbronnen.
- Bediening: (1) Laat het systeem langzaam volstromen. Open de procesafsluiters langzaam om drukstoten te voorkomen. (2) Controleer op lekkages rondom de inlaat- en uitlaataansluitingen van de stromingsmeter. Als er geen lekkages zijn, kan het systeem op de bedrijfsdruk worden gebracht.
- Zorg ervoor dat de procesleiding drukvrij is gemaakt voordat u servicewerkzaamheden gaat uitvoeren. Als vervangingsonderdelen nodig zijn, zorg er dan voor dat gekwalificeerd personeel de door Brooks Instrument gespecificeerde vervangingsonderdelen gebruikt. Niet goedgekeurde onderdelen en procedures kunnen de prestaties van het product en de veilige werking van uw proces in gevaar brengen. Niet goedgekeurde vervangingsonderdelen kunnen brand, elektrische schokken of een onjuiste werking tot gevolg hebben.
- Zorg ervoor dat alle deksels van de apparatuur gesloten zijn en de afdekkingen gemonteerd zijn om elektrische schokken en lichamelijk letsel te voorkomen, behalve als gekwalificeerd personeel de onderhoudswerkzaamheden uitvoert.

**▲ WAARSCHUWING: bij vloeistofstroomapparaten waarvan de inlaat- en uitlaatkleppen om welke reden dan ook gesloten zijn, moet de vloeistof volledig worden afgetapt. Als dat wordt nagelaten, kan dit leiden tot thermische expansie van de vloeistof waardoor het apparaat kan barsten en lichamelijk letsel kan veroorzaken.**

### PED (Pressure Equipment Directive)

Alle drukapparatuur met een interne druk van meer dan 0,5 barg en een diameter van meer dan 25 mm valt onder de PED-richtlijn.

- In het hoofdstuk Specificaties van deze handleiding staan aanwijzingen die verband houden met de PED-richtlijn.
- De producten die in deze handleiding worden beschreven, voldoen aan de Europese richtlijn 2014/34/EU.
- Alle stromingsmeters van Brooks Instrument vallen in groep 1.
- Producten met een diameter van meer dan 25 mm voldoen aan de categorieën I, II of III van de PED-richtlijn.
- Producten met een diameter van 25 mm of kleiner voldoen aan de regels van goed vakmanschap.

### Elektromagnetische compatibiliteit (EMC)

De elektronische apparatuur van Brooks Instrument met de CE-markering is succesvol getest in overeenstemming met de EMC-voorschriften (richtlijn EMC 2014/30/EU).

De keuze van de signaalkabel voor gebruik in combinatie met apparatuur met CE-markering verdient speciale aandacht.

#### **Kwaliteit van de signaalkabel, kabelafdichtingen en stekkers:**

Brooks Instrument levert hoogwaardige kabels die voldoen aan de specificaties voor de CE-markering.

Als u zelf voor signaalkabel zorgt, moet u altijd een volledig afgeschermd kabel gebruiken.

Stekkers van het type "D" of ronde stekkers moeten zijn voorzien van een metalen afscherming. Indien nodig moeten metalen kabelafdichtingen worden gebruikt waarvan de afscherming voor het klemmen van de kabel kan worden gebruikt.

Het kabelscherp moet met het metalen omhulsel of de metalen afdichting worden verbonden en aan beide uiteinden rondom volledig worden afgeschermd.

De afscherming moet aan de aardpotentiaal worden aangesloten.

Card Edge Connectors zijn standaard niet van metaal. De gebruikte kabels moeten volledig zijn afgeschermd om te voldoen aan de CE-markering.

De afscherming moet aan de aardpotentiaal worden aangesloten.

Voor de pinconfiguratie: Raadpleeg de bijgevoegde handleiding.

### Elektrostatische ontlading

**▲ VOORZICHTIG: Dit instrument bevat elektronische componenten die gevoelig zijn voor statische elektriciteit. Neem de juiste procedures in acht bij het verwijderen en installeren of bij andere werkzaamheden aan de interne printplaten of apparaten.**

#### **Procedure:**

1. Schakel de voeding van de eenheid uit.
2. Het personeel moet zich met een polsbandje of ander veilig en geschikt hulpmiddel aarden voordat een printplaat of ander intern apparaat mag worden geïnstalleerd, verwijderd of aangepast.
3. Printplaten moeten in een geleidende verpakking worden vervoerd. De platen mogen pas vlak voor de eigenlijke installatie uit de beschermende verpakking worden gehaald. Verwijderde printplaten moeten onmiddellijk in de beschermende verpakking worden geplaatst om te worden getransporteerd, opgeslagen of teruggestuurd naar de fabriek.

#### **Opmerkingen**

Dit instrument is niet uniek als het gaat om componenten die gevoelig zijn voor elektrostatische ontlading. De meeste moderne elektronische apparaten bevatten componenten die gebruik maken van de metaaloxidedechnologie (NMOS, SMOS, enz.). Uit ervaring blijkt dat zelfs kleine hoeveelheden statische elektriciteit deze apparaten al dan niet onherstelbaar kunnen beschadigen. Beschadigde componenten, zelfs als ze goed lijken te functioneren, raken eerder defect.



## Brooks® VDM300 Vapor Delivery Module

## Estonian

## Olulised juhised

### Enne kasutamist lugege hoolikalt läbi!

Brooks Instrument konstrueerib, valmistab ja katsetab oma tooteid sellisel, et need vastaksid paljudele riiklikele ja rahvusvahelistele standarditele. Ainult nõuetekohane paigaldamine, kasutamine ja hooldamine tagab toodete katkematu talitluse tavaspetsifikatsiooni raames. Brooks Instrumenti toodete paigaldamisel, kasutamisel ja hooldamisel tuleb täita alljärgnevat juhiseid ja integreerida need asjakohasesse ohutusprogrammi.

- Nõuetekohase talitluse tagamiseks tohib toodet paigaldada, kasutada, täiustada, programmeerida ja hooldada ainult kvalifitseeritud personal.
- Enne toote paigaldamist, kasutamist ja hooldamist lugege kõik kasutusjuhised hoolikalt läbi. Kui see kasutusjuhend ei vasta teie tootele, pöörduge kohaliku edasimüüja poole, kelle kontaktandmed leiате kasutusjuhendi tagakaanelt. Hoidke see kasutusjuhend edaspidiseks alles.
  - HOIATUS. Ärge kasutage seda instrumenti väljaspool kasutusjuhendis spetsifitseeritud piirväärtusi. Hoiatuse eiramine võib kaasa tuua raske kehavigastuse ja/või kahjustada seadet.**
- Kui te saa mõne juhise mõttest aru, pöörduge selgituste saamiseks kohaliku Brooks Instrumenti edasimüüja poole.
- Järgige kõiki hoiatusi, tähelepanule manitsusi ja juhiseid, mis on tootele peale kantud või tootega kaasa antud.
  - HOIATUS. Enne paigaldamist veenduge, et see instrument vastaks kohalike ja riiklike määrustega kehtestatud nimiaandmetele. Hoiatuse eiramine võib kaasa tuua raske kehavigastuse ja/või kahjustada seadet.**
- Seadme paigaldamisel järgige vastavas kasutusjuhendis toodud paigaldusjuhiseid ning asjakohaseid kohalikke ja riiklikke eeskirju. Ühendage tooted nõuetekohaste toite- ja surveallikatega.
- Talitus. (1) Avage aeglaselt vool süsteemi. Vooluimpulsside vältimiseks avage tööventiilid aeglaselt. (2) Kontrollige, et voolumõõduri sisend- või väljundühenduste ümber ei oleks lekkeid. Kui lekkeid ei ole, laske süsteemil saavutada töösurve.
- Enne seadme hooldamist veenduge, et kogu süsteem oleks surve alt vabastatud. Varuosadid tohib vahetada ainult kvalifitseeritud personal, kasutades selleks Brooks Instrumenti heakskiidetud varuosi. Mitteoriginaalvaruosade kasutamine ja ebapädev toimingute tegemine võivad kahjustada toote tööomadusi ja põhjustada riski tootmistevõlgu ohutuse tagamiseks. Originaalvaruosadele sarnast e osade kasutamine võib põhjustada tule- või elektrilöögiõhtu või seadme väärtallitust.
- Elektrilöögi- ja vigastuseohu vältimiseks peavad seadme luugid olema alati suletud ja kaitsekatted oma kohal, v.a seadme hooldamisel kvalifitseeritud isikute poolt.
  - HOIATUS. Voolava vedelikuga seadmete kasutamisel – kui seadmega külgnevad sisend- ja väljundklapid on vaja mingil põhjusel sulgeda, tuleb seadmed vedelikust täiesti tühjaks lasta. Vastasel korral võib vedelik soojuste mõjul paisuda niivõrd, et seade puruneb. See võib põhjustada raskeid kehavigastusi.**

### Euroopa surveseadmete direktiiv (PED)

Euroopa surveseadmete direktiiv kohaldub kõikidele surveseadmetele, mille sisesurve on üle 0,5 baari (g) ja läbimõõt üle 25 mm või 1 tolli.

- Selle kasutusjuhendi spetsifikatsiooniosa sisaldab surveseadmete direktiiviga seonduvat juhiseid.
- Kasutusjuhendis kirjeldatud tooted vastavad EL direktiivi 2014/34/EÜ nõuetele.
- Brooks Instrumenti voolumõõduri kuuluvad vedelike 1. gruppi.
- Toodete läbimõõduga üle 25 mm või 1 tolli vastavad surveseadmete direktiivi kategooriale I, II või III.
- Toodetele läbimõõduga alla 25 mm või 1 tolli kohaldatakse häid inseneritavasid.

### Euroopa elektromagnetilise ühilduvuse direktiiv (EMÜ)

Brooks Instrumenti (elektrilised/elektroonilised) seadmed, millele on omistatud CE-tähis, on edukalt läbinud asjakohased katsed ja vastavad elektromagnetilise ühilduvuse nõuetele (EMÜ direktiiv 2014/30/EÜ).

Kuid signaalkaabli valimisel on vaja pöörata suurt tähelepanu CE-tähisega seadmetele.

#### Signaalkaabli, läbiviigühendite ja konnektorite kvaliteet

Brooks Instrument turustab kõrgekvaliteedilisi kaableid, mis vastavad CE-sertifikaadi nõuetele.

Olemasoleva kaabli kasutamisel jälgige, et kaabel oleks täielikult ümbritsetud varjestusega.

„D“- või „Ring“-tüüpi konnektorid peavad olema varustatud metallvarjestusega. Võimaluse korral tuleb kasutada metallist läbiviike, mis tagavad kaabli varjestuse ühenduse.

Kaabli varjestus ühendatakse metallkasta või läbiviigühendiga ja on mõlemast otsast kaitstud 360° ulatuses.

Varjestus peab olema maandatud.

Mikroskeemide servaühendused on üldjuhul mittemetallist. Vastavuse tagamiseks CE-sertifikaadi nõuetele peavad kasutatud kaablid olema 100% varjestatud.

Varjestus peab olema maandatud.

Klemmide konfigureerimine: vt komplekti kuuluvat kasutusjuhendit.

### Elektrostaatiline laeng

**TÄHELEPANU!** Seade sisaldab staatilise elektri suhtes tundlikke elektroonikakomponente. Seadmesse paigaldatud trükkplaatide eemaldamisel ja paigaldamisel, samuti trükkplaadi või seadmega muude toimingute teostamisel järgige nõuetekohase käsitsemise juhiseid.

#### Käsitsemisjuhised

- Lahutage seade toiteallikast.
- Enne trükkplaadi või mõne muu siseelemendi paigaldamist, eemaldamist või konfigureerimist peab personal olema maandatud läbi randmepaela või mõne muu sobiva vahendi.
- Trükkplaatide transportitakse voolujuhtivas konteineris. Võtke trükkplaat kaitsvast konteinerist välja vahetult enne selle paigaldamist. Seadmest eemaldatud trükkplaadid tuleb viivitamatult asetada kaitsvasse konteinerisse, kas siis edasiseks transportimiseks, hoiustamiseks või tehasesse tagasisaatmiseks.

#### Kommentaariid

See seade ei ole ainus, mis sisaldab staatilise elektri suhtes tundlikke elemente. Enamik kaasaegsetest elektroonikaseadmetest sisaldavad komponente, mille valmistamiseks on kasutatud metalloksiidtehnoloogiat (NMOS, SMOS jne). Kogemused näitavad, et isegi väike kogus staatilist elektrit võib neid seadmeid kahjustada või isegi hävitada. Kuigi võib näida, et kahjustatud komponendid töötavad nõuetekohaselt, hakkavad talitlushäired ilmneema juba varakult.

**Finnish**

**Perusohjeet**  
**Lue ensin ohjeet huolellisesti!**

Brooks Instrument suunnittelee, valmistaa ja testaa laitteensa vastaamaan useimpien kotimaisten ja kansainvälisten standardien vaatimuksia. Tuotteet tulee asentaa, käyttää ja huoltaa käyttöohjeiden mukaan jotta niiden toimivuus taataan. Brooks Instrumentin laitteiden asennuksessa, käytössä ja huollossa on noudatettava soveltuvia määräyksiä ja ohjeita, lisäksi mainitut ohjeet on huomioitava työsuojelun ohjeistuksessa.

Oikean toiminnan varmistamiseksi vain valtuutettu huoltohenkilö saa asentaa, käynnistää, päivittää, ohjelmoida ja huoltaa laitteita. Lue kaikki käyttöohjeet koskien tuotteen asennusta, käyttöä ja huoltoa. Jos käyttöohje on puutteellinen, lisätietoja saa paikalliselta jälleenmyyjältä. Yhteystiedot löytyvät oppaan kansilehdestä. Säilytä ohjeet.

**VAROITUS!** Käyttöohjeessa ilmoitettujen standardien mukaisia ohjeita ja raja-arvoja ei saa ylittää. Rajoitusten laiminlyönti voi aiheuttaa tuotteen rikkoutumisen ja/tai vakavan henkilövahingon vaaran.

- Jos ohjeissa on epäselvyyttä, ota yhteyttä Brooks Instrumentin edustajaan ongelman selvittämiseksi.
- Noudata kaikkia laitteessa olevia tai siihen liittyviä ohjeita, määräyksiä ja varoituksia.

**VAROITUS:** Tarkista ennen asennusta, että tällä laitteella on paikallisten ja maasi koodien mukaiset hyväksyntäluokitukset. Tämän varoituksen laiminlyönnistä saattaa aiheutua vakava vamma ja/tai laitevaurio.

- Laitteen asennuksessa on noudatettava erityisiä asennusohjeita sekä voimassa olevia paikallisia ja kansainvälisiä määräyksiä. Laitteet saa yhdistää vain sopivaan sähkö- ja paineverkkoon.
- Asennusohjeita: (1) Päästä virtaus hitaasti järjestelmään. Avaa venttiili hitaasti, jotta virtaus pysyy tasaisena. (2) Tarkista, ettei virtausmittarin sisään- ja ulosmenon liittoksissa ole vuotoa. Jos järjestelmässä ei ole vuotoa, aseta oikea käyttöpain.
- Tarkista, että laitteeseen menevä paine on katkaistu ennen laitteen korjaamista välttääksesi loukkaantumisriskin. Mahdollisten varaosien tulee olla Brooks Instrumentin hyväksymiä. Vain valtuutettu huoltohenkilö saa asentaa varaosat. Ei-hyväksytyjen varaosien käyttö voi vahingoittaa tuotteen toimintaa ja aiheuttaa turvallisuusriskin. Samoin ei-hyväksytyjen varaosien käyttö voi aiheuttaa tulipalon, sähköiskun tai virhetoiminnan riskin.
- Varmista että kaikki kaikki laitteen ovet/luukut ovat suljettuina ja tarkista että suojakannet ovat paikoillaan estääksesi mahdollisen sähköisku- ja loukkaantumiskaavan.

**VAROITUS!** Jos järjestelmässä virtaa neste ja laitteen sisään- ja ulosmenoventtiilit pitää sulkea, laite on ensin tyhjennettävä kokonaan. Tyhjentämisen laiminlyönti aiheuttaa nesteen lämpölaajenemista, joka saattaa johtaa laitteen rikkoutumiseen ja henkilövahingon vaaraan.

**Eurooppalainen painelaitedirektiivi (PED)**

Painelaitteet, joiden paine on suurempi kuin 0,5 bar (g) ja joiden koko on suurempi kuin 25 mm tai 1 tuuma, kuuluvat eurooppalaiseen painelaitedirektiiviin (PED).

- PED direktiiviä koskevat määräykset löytyvät käyttöoppaan "Tekniset tiedot" -luvusta.
- Käyttöoppaassa kuvatut tuotteet ovat 2014/34/EU EU-direktiivin mukaisia.
- Kaikki Brooks Instrumentin virtausmittarit kuuluvat ryhmään 1. Laitteet, jotka ovat suurempia, kuin 25 mm tai 1 tuuma, ovat PED I, II, III kategorien mukaisia.
- Mittarit joiden koko on alle 25 mm tai 1 tuuma ovat hyvän konepajakäytännön (SEP) mukaisia.

**Eurooppalainen direktiivi sähkömagneettisesta yhteensopivuudesta (EMC)**

Brooks Instrumentin CE-merkin saaneet (sähkö/sähköiset) laitteet täyttävät EMC direktiivin vaatimukset ja testit sähkömagneettisesta yhteensopivuudesta (2014/30/EU EMC direktiivi).

Erityistä huomioita on kiinnitettävä CE-merkittyjen laitteiden käytössä olevien kaapelien valintaan.

**Kaapelien, kiinnikkeiden ja liittimien laatu:**

Brooks Instrumentin kaapelit ovat korkealaatuisia ja täyttävät CE-merkintä direktiivin vaatimukset.

Muun valmistajan kaapelia käytettäessä on käytettävä 100% suojattua kaapelia.

Liittimien tulee olla häiriösuojattua tyyppiä. Tarvittaessa käytetään metallisia kiinnikkeitä kaapelin suojuksen kiinnittämiseen. Kaapelin suojuksen pitää olla yhdistettynä metallisuojukseen tai laippaan ja sen pitää olla molemmista päistä suojattuna 360°. Suojaus päättyy maadoitukseen.

Standardin mukaan korttien liittimet eivät ole metallisia. Käytettyjen kaapelien suojaus on oltava 100%, jotta se täyttäisi CE-merkinnän direktiivin vaatimukset.

Suojaus päättyy maadoitukseen.

Napojen järjestys: Katso liitteenä oleva käyttöopas.

**Elektrostaattinen purkaus (ESD)**

**VAROITUS!** Tuote sisältää elektroniikkakomponentteja jotka voivat vahingoittaa staattisesta sähköstä. Sisäisten piirilevyjen purkamisessa, asennuksessa ja käsittelyssä tulee noudattaa kaikkia määräyksiä ja ohjeita.

**Asennusohjeet:**

1. Järjestelmän sähkökatkaistaan.
2. Laitteen kanssa työskentelevä henkilö on suojattava sähköiskulta rannehihnalla tai muulla suojaruuduksella ennen piirilevyn tai muun sisäosan asennusta, poistamista tai korjaamista.
3. Piirilevyt kuljetetaan antistaattisessa pakkauksessa. Piirilevyt puretaan paketista juuri ennen asennusta. Poistettu piirilevy on heti pakattava soveltuvaan suoja-pakkaukseen kuljettamista, varastoimista tai palautusta varten.

**Huomautukset:**

Tuotteen herkkyys elektrostaattiselle purkaukselle (ESD) ei ole epätavallista. Suurin osa elektroniikkatuotteista sisältää komponentteja jotka hyödyntävät metallioksiditeknikkaa (NMOS, SMOS jne.) Kokemusten mukaan pienikin elektrostaattinen purkaus voi aiheuttaa laitteiden virhetoiminnan tai vahingoittumisen. Vahingoittuneet komponentit saattavat aiheuttaa laitteen ennenaikaisen rikkoutumisen vaikka laite näyttäisi toimivan normaalisti.



## Brooks® VDM300 Vapor Delivery Module

## French

### Instructions essentielles A lire avant de commencer !

Brooks Instrument conçoit, fabrique et teste ses produits pour répondre à de nombreuses normes nationales et internationales. Ces produits doivent être correctement installés, utilisés et entretenus pour pouvoir fonctionner dans le cadre de leurs spécifications normales. Les instructions qui suivent doivent être respectées et intégrées à votre programme de sécurité lors de l'installation, l'utilisation et l'entretien des produits Brooks Instrument.

- Afin d'assurer un fonctionnement correct, faites appel à du personnel qualifié pour l'installation, l'utilisation, la mise à jour, la programmation et l'entretien du produit.
- Lisez toutes les instructions avant l'installation, l'utilisation et l'entretien du produit. Si le présent manuel d'utilisation n'est pas le bon, consultez la dernière page de la couverture pour connaître le point de vente le plus proche. Conservez ce manuel d'utilisation pour pouvoir vous y reporter par la suite.

**▲ AVERTISSEMENT: n'utilisez pas cet instrument au-delà des spécifications énumérées dans le manuel d'utilisation. Le non-respect de cet avertissement peut entraîner de graves blessures et / ou endommager l'équipement.**

- Si vous ne comprenez pas l'une des instructions, prenez contact avec un représentant de Brooks Instrument pour obtenir des explications.
- Tenez compte de tous les avertissements, précautions et instructions marquées sur le produit et fournies avec celui-ci.

**▲ AVERTISSEMENT: Avant toute installation, vérifier que cet instrument est conformes aux normes locales et nationales. Le non-respect de cet avertissement peut entraîner des blessures graves et/ou endommager l'équipement.**

- Installez votre équipement de la façon indiquée dans les instructions d'installation du manuel d'utilisation et conformément à la législation en vigueur au niveau local et national. Branchez tous les produits aux sources d'électricité et de pression agréées.
- Utilisation : (1) Faites lentement entrer le débit dans le système. Ouvrez progressivement les vannes de procédé pour éviter des pics de débits. (2) Vérifiez qu'il n'y a pas de fuite au niveau des branchements d'entrée et de sortie du débitmètre. S'il n'y a pas de fuite, amenez le système à sa pression d'utilisation.
- Avant de procéder à l'entretien, assurez-vous que la conduite de procédé n'est plus sous pression. Lorsqu'il faut remplacer une pièce, assurez-vous que les pièces de rechange sont celles indiquées par Brooks Instrument et que des personnes qualifiées effectuent le remplacement. Les pièces et procédures non autorisées peuvent porter atteinte au fonctionnement du produit et mettre en péril la sécurité de votre procédé. Les remplacements par des pièces d'apparence similaire peuvent entraîner des incendies, des risques électriques ou un mauvais fonctionnement.
- Vérifiez que toutes les trappes de l'équipement sont fermées et que les couvercles de protection sont en place pour éviter les chocs électriques et les blessures, sauf lorsque l'entretien est réalisé par des personnes qualifiées.

**▲ AVERTISSEMENT: dans le cas d'appareils à écoulement liquide, si les vannes d'entrée et de sortie adjacentes aux appareils doivent être fermées pour une raison quelconque, les appareils doivent être complètement vidangés. Si cela n'est pas fait, une éventuelle dilatation thermique du fluide peut casser l'appareil et provoquer des blessures.**

### Directive européenne « équipements sous pression » (PED)

- Tous les équipements sous pression dont la pression interne est supérieure à 0,5 bar (pression relative) et dont la taille dépasse 25 mm ou un pouce entrent dans le cadre de la directive PED.
- La section « Spécifications » de ce manuel contient les instructions relatives à la directive PED.
- Les appareils de mesure de ce manuel sont conformes à la directive EN 2014/34/EU.
- Tous les débitmètres Brooks Instrument fonctionnent avec des fluides de groupe 1.
- Les appareils de mesure d'une taille supérieure à 25 mm ou un pouce entrent dans la catégorie PED I, II ou III.
- Les appareils de mesure d'une taille inférieure ou égale à 25 mm ou un pouce relèvent des « bonnes pratiques d'ingénierie » (SEP).

### Compatibilité électromagnétique européenne (CEM)

L'équipement Brooks Instrument (électrique / électronique) portant le marquage CE répond à la réglementation en matière de compatibilité électromagnétique (directive CEM 2014/30/EU).

Il faut cependant prêter une grande attention au choix du câble d'interconnexion à utiliser avec l'équipement marqué CE.

**Qualité du câble d'interconnexion, des presse-étoupes et connecteurs :**

Brooks Instrument fournit un ou des câbles de qualité supérieure qui répondent aux spécifications exigées pour la certification CE.

Si vous utilisez votre propre câble d'interconnexion, ce câble doit être protégé par un blindage intégral.

Les connecteurs rectangulaires ou circulaires utilisés doivent avoir un blindage métallique. S'il y a lieu, des presse-étoupes métalliques doivent faire office de serre-écran de câble.

L'écran du câble doit être raccordé à l'enveloppe métallique ou au presse-étoupe et blindé aux deux extrémités sur 360 degrés.

Le blindage doit s'achever sur une prise de terre.

Les connecteurs de carte standards sont non métalliques. Les câbles utilisés doivent être protégés par un blindage intégral pour se conformer à la certification CE.

Le blindage doit s'achever sur une prise de terre.

En ce qui concerne la configuration des broches, veuillez vous reporter au manuel d'utilisation joint.

### ESD (décharge électrostatique)

**▲ ATTENTION : cet instrument contient des composants électroniques sensibles à l'électricité statique. Des procédures de manipulation adéquates doivent être respectées pendant le retrait, l'installation ou la manipulation des cartes de circuits imprimés ou des dispositifs internes.**

**Procédure de manipulation :**

1. L'alimentation électrique de l'appareil doit être coupée.
2. Le personnel doit être mis à la terre, au moyen d'une bande de poignet ou d'un autre moyen sûr et adéquat, avant l'installation, le retrait ou le réglage de toutes les cartes de circuits imprimés ou autres dispositifs internes.
3. Les cartes de circuits imprimés doivent être transportées dans un récipient conducteur. Les cartes ne doivent être enlevées de cette enveloppe protectrice qu'au dernier moment, juste avant l'installation. Les cartes retirées doivent être immédiatement placées dans un récipient de protection pour le transport, le stockage ou le retour à l'usine.

**Observations**

Brooks Instrument n'est pas le seul à proposer des produits comportant des composants sensibles aux décharges électrostatiques. La plupart des produits électroniques modernes contiennent des composants qui utilisent des technologies à oxydes métalliques (NMOS, SMOS, etc.). L'expérience démontre que d'infimes quantités d'électricité statique suffisent à endommager ou détruire ces appareils. Les composants endommagés, même s'ils semblent fonctionner correctement, tombent rapidement en panne.

# Installation and Operation Manual

X-VAP-VDM300-eng

Part Number: 541B210AAG

October, 2018

# Brooks® VDM300 Vapor Delivery Module

## German

### Wichtige Anweisungen Bitte zuerst lesen!

Brooks Instrument entwickelt, produziert und testet seine Produkte derart, dass sie viele nationale und internationale Standards erfüllen. Nur bei korrektem Einbau sowie richtiger Bedienung und Wartung dieser Produkte ist ein Betrieb unter Einhaltung der Standardvorgaben sichergestellt. Die folgenden Anweisungen müssen eingehalten werden und in Ihr Sicherheitsprogramm integriert werden, wenn Sie Brooks Produkte installieren, bedienen und warten.

- Um die entsprechende Leistung zu gewährleisten, setzen Sie qualifiziertes Personal für die Installation, den Betrieb, die Aktualisierung, Programmierung und Wartung des Produkts ein.
- Lesen Sie alle Anweisungen, bevor Sie das Produkt installieren, in Betrieb nehmen und warten. Falls es sich bei diesem Handbuch nicht um das richtige Handbuch handelt, schauen Sie bitte auf der Rückseite nach den Kontaktdaten Ihres Vertriebsbüros vor Ort. Bewahren Sie dieses Handbuch auf, falls Sie später etwas nachschauen möchten.

**⚠ WARNUNG: Dieses Gerät nicht außerhalb der in Bedienungsanleitung und Handbuch angegebenen Grenzen betreiben. Wird diese Warnung nicht beachtet, kann dies zu schweren Personenschäden bzw. Schäden des Gerätes führen.**

- Falls Sie Anweisungen nicht verstehen, wenden Sie sich zur Klärung an Ihren Brooks Instrument Vertreter.
- Befolgen Sie alle Warnhinweise und Anweisungen, die auf dem Produkt markiert sind oder zusammen mit diesem geliefert werden.

**⚠ ACHTUNG: Vor der Installation sicherstellen, dass dieses Instrument den nationalen und lokalen Vorschriften entspricht. Die Nichtbeachtung kann zu schweren Verletzungen und/oder Schäden am Gerät führen.**

- Installieren Sie Ihr Gerät, wie in den Installationsanweisungen des entsprechenden Handbuchs angegeben und gemäß der gültigen regionalen und nationalen Gesetze. Schließen Sie alle Produkte an eine geeignete Strom- und Druckluftversorgung an.
- Bedienung: (1) Langsam den Zufluss zum System starten. Die Ventile langsam öffnen, um einen sprunghaften Anstieg der Durchflussmenge zu verhindern. (2) Bereich der Anschlüsse (Zufluss und Ausfluss) des Durchflussmessers auf Undichtigkeiten überprüfen. Wenn das System dicht ist, auf Betriebsdruck hochfahren.
- Sicherstellen, dass der Leitungsdruck vor Wartungsarbeiten heruntergefahren wird. Wenn Ersatzteile benötigt werden, stellen Sie sicher, dass qualifizierte Personen Ersatzteile verwenden, die von Brooks Instrument vorgegeben sind. Nicht genehmigte Teile und Verfahren können die Leistungsfähigkeit des Produkts beeinträchtigen und den sicheren Betrieb Ihres Prozesses gefährden. Ähnlich aussehende Austauschteile können zu Bränden, elektrischen Gefahren oder nicht sachgerechtem Betrieb führen.
- Stellen Sie sicher, dass alle Türen der Anlage geschlossen sind und dass alle Schutzabdeckungen angebracht sind, um Stromschläge und Personenschäden zu vermeiden, es sei denn die Wartungsaufgaben werden von qualifizierten Personen durchgeführt.

**⚠ WARNUNG: Werden die Ein- und Auslassventile neben Durchflussmessgeräten aus irgendwelchen Gründen geschlossen, so müssen die Geräte komplett entleert werden.**

**Durchflussmessgeräete muessen vor dem Schliessen von Ein- und Auslassventilen komplett entleert werden, anderenfalls kann es zu einer thermischen Ausdehnung der Flüssigkeit und damit zum Bruch des Gerätes kommen; Personenschäden können die Folge sein.**

### Europäische Druckgeräterichtlinie (PED)

Alle Druckgeräte mit einem internen Druck von mehr als 0,5 bar (g) und einer Größe von mehr als 1in ( 1 in = 25,4 mm) unterliegen der Druckgeräterichtlinie.

- Das Kapitel zu den technischen Daten in dieser Anleitung enthält wichtige Sicherheits- und Betriebsanweisungen in Bezug auf die Druckgeräterichtlinie.
- Produkte die in diesem Handbuch beschrieben sind, erfüllen die europäische Richtlinie 2014/34/EU.
- Alle Durchflussmesser von Brooks Instrument fallen unter die Fluidgruppe 1.
- Produkte die größer als 25 mm oder 1" (inch) sind, erfüllen die Kategorien I, II oder III der Druckgeräterichtlinie (PED).
- Produkte mit einer Größe von 25 mm oder 1" (inch) oder kleiner sind Sound Engineering Practice (SEP).

### Europäische Verordnung zur elektromagnetischen Verträglichkeit (EMV)

Geräte von Brooks Instrument (elektrischer und elektronischer Art) mit CE-Zeichen haben den Test auf Einhaltung der Verordnung zur elektromagnetischen Verträglichkeit (EMV Richtlinie 2014/30/EU) erfolgreich bestanden. Dennoch muss bei der Wahl des Signalkabels für das Gerät mit CE-Zeichen auf folgende Dinge geachtet werden.

#### **Qualität von Signalkabel, Kabeldurchführung und Anschlüsse:**

Brooks Instrument liefert qualitativ hochwertige Kabel, die den Anforderungen für eine CE-Zertifizierung entsprechen.

Sollten Sie eigene Kabel einsetzen, so sollte das Kabel überall mit einer 100%-Abschirmung versehen sein.

D- oder Rundstecker sollten eine Metallabschirmung aufweisen. Wenn möglich, müssen Kabeldurchführungen aus Metall mit Kabelschirmgeflechts-Klemmen verwendet werden.

Der Kabelschirm sollte an die Metallhülle oder -durchführung angeschlossen werden und an beiden Enden rundherum (360°) abgeschirmt werden.

Die Abschirmung sollte geerdet werden.

Randstecker auf Platinen sind standardmäßig nicht aus Metall. Die verwendeten Kabel müssen mit einer 100 % Abschirmung versehen werden, um die CE-Vorgaben zu erfüllen.

Die Abschirmung sollte geerdet werden.

Klemmenbelegung: Siehe beigefügtes Handbuch.

### ESD (Elektrostatistische Entladung)

**⚠ ACHTUNG: Dieses Gerät enthält elektronische Komponenten, die durch elektrostatische Entladungen beschädigt werden können. Ordnungsgemäße Verfahrensweisungen müssen während des Ausbaus, der Installation oder anderer Handhabung der eingebauten Platinen oder Geräte eingehalten werden.**

#### **Verfahrensweisung:**

1. Trennen Sie das Gerät von der Stromversorgung.
2. Das Personal ist vor dem Einbau, Ausbau oder der Einstellung von Platinen oder anderen internen Komponenten durch ein entsprechendes Armband mit dem Erdpotential zu verbinden.
3. Platinen sind in speziellen Behältern mit Schutz gegen elektrostatische Spannungen zu transportieren oder zu lagern. Platinen dürfen erst kurz vor dem Einbau aus der Schutzhülle entfernt werden. Ausgebaute Platinen müssen umgehend in Schutzhälter zum Transport, zur Lagerung oder Rücksendung an das Werk gelegt werden.

#### **Anmerkung**

Dieses Gerät ist wie viele andere elektronische Geräte auch mit Komponenten bestückt, die anfällig für elektrostatische Entladung sind. Die meisten modernen, elektronischen Geräte enthalten Komponenten, die die Metalloxidtechnologie (NMOS, SMOS etc.) verwenden. Die Erfahrung hat gezeigt, dass schon geringe Mengen elektrostatischer Energie ausreichen, um diese Geräte zu beschädigen oder zu zerstören. Beschädigte Teile fallen früh aus, obwohl sie funktionsfähig zu sein scheinen.

## Brooks® VDM300 Vapor Delivery Module

## Greek

### Βασικές οδηγίες Διαβάστε πριν συνεχίσετε!

Η Brooks Instrument σχεδιάζει, παράγει και δοκιμάζει τα προϊόντα της σε συμμόρφωση με πλήθος εθνικών και διεθνών προτύπων. Η σωστή εγκατάσταση, χρήση και συντήρησή τους αποτελεί απαραίτητη προϋπόθεση της λειτουργίας εντός των κανονικών ορίων. Οι παρακάτω οδηγίες πρέπει να τηρούνται και πρέπει να εσωματωθούν στο πρόγραμμα ασφάλειας της εργασίας σας κατά την εγκατάσταση, χρήση και συντήρηση προϊόντων της Brooks Instrument.

- Για σωστό αποτέλεσμα η εγκατάσταση, λειτουργία, ενημέρωση, προγραμματισμός και συντήρηση πρέπει να γίνεται από ειδικευμένο προσωπικό.
- Διαβάστε όλες τις οδηγίες πριν εγκαταστήσετε, λειτουργήσετε και συντηρήσετε το προϊόν. Εάν το παρόν εγχειρίδιο δεν είναι το σωστό εγχειρίδιο, συμβουλευθείτε το πίσω εξώφυλλο για τα στοιχεία επικοινωνίας του τοπικού αντιπροσώπου. Φυλάξτε το εγχειρίδιο αυτό για μελλοντική αναφορά.

**▲ ΠΡΟΕΙΔΟΠΟΙΗΣΗ: Μη λειτουργείτε τη συσκευή αυτή καθ' υπέρβαση των ορίων που αναγράφονται στο Εγχειρίδιο Οδηγιών και Λειτουργίας. Η μη συμμόρφωση με την προειδοποίηση αυτή μπορεί να οδηγήσει σε σοβαρό προσωπικό τραυματισμό ή/και ζημιά στον εξοπλισμό.**

- Σε περίπτωση μη κατανόησης κάποιας από τις οδηγίες ζητήστε διευκρινίσεις από τον τοπικό αντιπρόσωπο της Brooks Instrument.
- Τηρείτε όλες τις προειδοποιήσεις, προφυλάξεις και οδηγίες που αναγράφονται ή συνοδεύουν το προϊόν.

**▲ ΠΡΟΕΙΔΟΠΟΙΗΣΗ: Πριν από την εγκατάσταση βεβαιωθείτε ότι αυτό το εργαλείο διαθέτει τις απαιτούμενες εγκεκριμένες προδιαγραφές ώστε να συμμορφώνεται με τους τοπικούς και εθνικούς κανονισμούς. Η αποτυχία τήρησης της παρούσας προειδοποίησης μπορεί να οδηγήσει σε σοβαρό τραυματισμό και/ή ζημιά στον εξοπλισμό**

- Εγκαταστήστε τη συσκευή όπως προβλέπεται στις οδηγίες εγκατάστασης του σωστού εγχειριδίου οδηγιών και στις κείμενες τοπικές και εθνικές διατάξεις. Συνδέστε τα προϊόντα στις εκάστοτε σωστές παροχές ρεύματος και πίεσης.
- Διαδικασία: (1) Αφήστε να ξεκινήσει αργά η ροή στο σύστημα. Ανοίξτε αργά τις βαλβίδες λειτουργίας για να αποφύγετε τις απότομες αυξομειώσεις ροής. (2) Ελέγξτε για διαρροές τις συνδέσεις εισόδου και εξόδου του ροόμετρου. Αν δεν υπάρχουν διαρροές, γεμίστε το σύστημα μέχρι η πίεση να φτάσει την κανονική πίεση εργασίας.
- Πριν από τη συντήρηση βεβαιωθείτε ότι γραμμή εργασίας έχει τεθεί εκτός πίεσης. Σε περίπτωση αντικατάστασης ανταλλακτικών βεβαιωθείτε ότι το προσωπικό είναι ειδικευμένο και χρησιμοποιεί ανταλλακτικά που προβλέπει η Brooks Instrument. Μη εγκεκριμένα ανταλλακτικά και επεμβάσεις ενδέχεται να επιπρεάσουν τις επιδόσεις του προϊόντος και να προκαλέσουν κίνδυνο για την ασφαλή λειτουργία. Αντικαταστάσεις με φαινομενικά όμοια ανταλλακτικά ενδέχεται να προκαλέσουν πυρκαγιά, κίνδυνο ηλεκτροπληξίας ή ανεπαρκή λειτουργία.
- Βεβαιωθείτε ότι όλα τα ανοίγματα του εξοπλισμού είναι κλειστά και τα προστατευτικά καλύμματα είναι στη θέση τους προκειμένου να αποφευχθεί ο κίνδυνος ηλεκτροπληξίας και προσωπικών τραυματισμών, εκτός εάν εκτελούνται εργασίες συντήρησης από ειδικευμένο προσωπικό.

**▲ ΠΡΟΕΙΔΟΠΟΙΗΣΗ: Προκειμένου για συσκευές με ροή ρευστού, όταν για οποιονδήποτε λόγο πρόκειται να κλείσουν οι βαλβίδες εισαγωγής και εξαγωγής κοντά στις συσκευές, οι συσκευές πρέπει να αποστραγγιστούν εντελώς. Η μη συμμόρφωση μπορεί να προκαλέσει θερμική διαστολή του υγρού που περιέχουν, με αποτέλεσμα να ραγίσει η συσκευή και να προκληθούν προσωπικοί τραυματισμοί.**

### Ευρωπαϊκή Οδηγία για τον εξοπλισμό υπό πίεση (PED)

Κάθε εξοπλισμός υπό πίεση με εσωτερική πίεση άνω του 0,5 bar (g) και μεγέθους μεγαλύτερου των 25 mm ή της 1 ίντσας εμπίπτει στις διατάξεις της ευρωπαϊκής Οδηγίας για τον εξοπλισμό υπό πίεση (PED).

- Το κεφάλαιο Προδιαγραφές του παρόντος εγχειριδίου περιλαμβάνει οδηγίες σχετικά με την Οδηγία PED.
- Τα προϊόντα που περιγράφονται στο παρόν εγχειρίδιο συμμορφώνονται με την ευρωπαϊκή Οδηγία 2014/34/EU.
- Όλα τα ροόμετρα της Brooks Instrument ανήκουν στην ομάδα ρευστών 1.
- Προϊόντα μεγαλύτερα από 25 mm ή 1 ίντσα συμμορφώνονται με τις κατηγορίες I, II και III της Οδηγίας PED.
- Προϊόντα μεγέθους 25 mm ή 1 ίντσας ή και μικρότερα κατασκευάζονται σύμφωνα με ορθές τεχνικές πρακτικές (SEP).

### Ευρωπαϊκή Οδηγία για την ηλεκτρομαγνητική συμβατότητα (EMC)

Ο (ηλεκτρικός/ηλεκτρονικός) εξοπλισμός της Brooks Instrument που φέρει το σήμα CE έχει υποστεί επιτυχώς τις δοκιμές που προβλέπουν οι διατάξεις της Οδηγίας για την ηλεκτρομαγνητική συμβατότητα (Οδηγία 2014/30/EU για την EMC).

Πάντως χρειάζεται ιδιαίτερη προσοχή στην επιλογή του καλωδίου σήματος για τον εξοπλισμό που φέρει το σήμα CE.

**Ποιότητα των καλωδίων σήματος, στυπιοθλίπτων και βυσμάτων καλωδίων:**

Η Brooks Instrument προσφέρει υψηλής ποιότητας καλώδια τα οποία πληρούν τις προδιαγραφές CE.

Σε περίπτωση παροχής δικού σας καλωδίου σήματος, χρησιμοποιείτε καλώδιο με πλήρη θωράκιση 100% σε όλα τα σημεία.

Βύσματα τύπου «D» ή κυκλικά πρέπει να έχουν μεταλλική θωράκιση. Να χρησιμοποιηθούν κατά προτίμηση μεταλλικοί στυπιοθλίπτες καλωδίων για τη στερέωση της θωράκισης.

Να συνδεθεί η θωράκιση του καλωδίου στο μεταλλικό κέλυφος ή στυπιοθλίπτη και να θωρακιστεί και στα δύο άκρα κατά 360 μοίρες. Η θωράκιση πρέπει να τερματίζει σε γείωση εδάφους.

Τα βύσματα άκρου της πλακέτας είναι εκ κατασκευής μη μεταλλικά. Τα χρησιμοποιούμενα καλώδια πρέπει να έχουν 100% θωράκιση για συμμόρφωση με την πιστοποίηση CE. Η θωράκιση πρέπει να τερματίζει σε γείωση εδάφους.

Για τη διάταξη των ακίδων: Συμβουλευθείτε το συνημμένο εγχειρίδιο οδηγιών.

### Ηλεκτροστατική εκκένωση (ESD)

**▲ ΠΡΟΦΥΛΑΞΗ: Η συσκευή αυτή περιέχει ηλεκτρονικά εξαρτήματα τα οποία μπορούν να υποστούν εύκολα βλάβες από τον στατικό ηλεκτρισμό. Πρέπει να ακολουθούνται οι ορθές διαδικασίες χειρισμού κατά την αφαίρεση, τοποθέτηση ή άλλο χειρισμό των εσωτερικών πλακετών και διατάξεων.**

**Διαδικασία χειρισμού:**

1. Θέστε τη συσκευή εκτός τάσεως.
2. Φροντίστε για τη γείωση του προσωπικού με περικάρπιο ή άλλο ασφαλές και κατάλληλο μέσο πριν τοποθετήσετε, αφαιρέσετε ή ρυθμίσετε κάρτες τυπωμένων κυκλωμάτων ή άλλη εσωτερική διάταξη.
3. Οι κάρτες τυπωμένων κυκλωμάτων πρέπει να μεταφέρονται σε συσκευασία από αγώγιμο υλικό. Οι κάρτες δεν πρέπει να αφαιρεθούν από το προστατευτικό περίβλημα παρά μόνο αμέσως πριν από την τοποθέτηση. Οι κάρτες που αφαιρέθηκαν πρέπει να τοποθετηθούν αμέσως σε προστατευτική συσκευασία για μεταφορά, αποθήκευση ή επιστροφή στο εργοστάσιο.

**Παρατηρήσεις:**

Η ύπαρξη εξαρτημάτων ευαίσθητων στα φαινόμενα ESD (ηλεκτροστατικής εκκένωσης) δεν είναι μοναδικό χαρακτηριστικό της συσκευής αυτής. Οι περισσότερες σύγχρονες ηλεκτρονικές συσκευές περιέχουν εξαρτήματα τεχνολογίας μεταλλικών οξειδίων (NMOS, SMOS κ.ά.). Η πείρα έχει αποδείξει ότι μια μικρή ποσότητα στατικού ηλεκτρισμού αρκεί για να προκαλέσει βλάβες ή να καταστρέψει τις συσκευές αυτές. Εξαρτήματα που υπέστησαν βλάβη, ακόμη και αν μοιάζουν να λειτουργούν σωστά, κινδυνεύουν από πρώιμη αστοχία.

**Hungarian**

**Alapvető utasítások  
Először olvassa el ezeket!**

A Brooks Instrument olyan módon tervezi, gyártja és teszti termékeit, hogy azok megfeleljenek számos belföldi és nemzetközi szabványnak. Ezeket a berendezéseket megfelelően kell telepíteni, üzemeltetni és karbantartani ahhoz, hogy mindenképpen a normál működési tartományuknak megfelelően üzemelhessenek. Az alábbi utasításokat be kell tartani, és be kell építeni a munkavédelmi programba a Brooks Instrument termékeinek telepítése, üzemeltetése és karbantartása során.

A megfelelő teljesítmény garantálása érdekében kizárólag szakképzett személyzet végezze a termék telepítését, üzemeltetését, frissítését, programozását és karbantartását.

Valamennyi utasítást el kell olvasni a termék telepítése, üzemeltetése és szervizelése előtt. Amennyiben ez a kézikönyv nem a megfelelő kiadvány, a hátsó borítón keresse meg a helyi forgalmazót, és további tájékoztatásért lépjen kapcsolatba vele. Őrizze meg ezt a kézikönyvet későbbi tájékoztatásként.

**▲ FIGYELEM: Ne működtesse a berendezést az üzemeltetési utasításban megadott üzemi tartományokon túl. Ennek megsértése súlyos személyi sérüléshez vagy a berendezés meghibásodásához vezethet.**

- Amennyiben a kézikönyv utasításai nem egyértelműek, lépjen kapcsolatba Brooks Instrument képviselőjével, hogy tisztázzák a problémát.
- Tartsa be a berendezésen feltüntetett vagy azzal együtt szállított összes figyelmeztetést, felhívást és utasítást.

**▲ FIGYELEM: Üzembe helyezés előtt győződjön meg arról, hogy a műszer rendelkezik-e a helyi és nemzeti szabványoknak megfelelő jóváhagyásokkal. Ennek elmulasztása súlyos személyi sérülést és / vagy az eszköz károsodását okozhatja!**

- A megfelelő telepítési utasításban megadott utasítások valamint a hatályos helyi és nemzeti előírások szerint telepítse a berendezést. A termékeket kizárólag a megfelelő elektromos és nyomásellátó forrásra kösse.
- Menete: (1) Lassan helyezze nyomás alá a rendszert. Lassanként nyissa ki az üzemi szelepeket az áramlasingadozás elkerülése érdekében. (2) Ellenőrizze, nincs-e szivárgás az áramlásmérő be-, és kimeneti bekötéseinél. Ha nincs szivárgás, tölts fel a rendszert az üzemi nyomásra.
- Szervizelés előtt mindenképpen ellenőrizze, hogy az üzemi vezeték nincs-e nyomás alatt. Amennyiben cserealkatrészekre van szükség, mindenképpen szakképzett személynek kell kezelnie a Brooks Instrument által meghatározott cserealkatrészeket. A nem engedélyezett alkatrészek és tevékenységek befolyásolhatják a termék teljesítményét, illetve veszélyeztethetik a biztonságos üzemeltetést. A pusztán hasonló alkatrészekkel történő helyettesítés tüzet, áramütésveszélyt vagy elégtelen működést eredményezhet.
- A berendezés összes ajtaja mindenképpen legyen zárva, a védőburkolatok pedig legyenek a helyükön az áramütés és a személyi sérülések elkerülése érdekében, kivéve, ha szakképzett szakember végez rajta karbantartási munkákat.

**▲ FIGYELEM: Folyadékot áramoltató berendezések esetében, ha bármilyen okból el kell zárni a berendezés melletti ki-, és belépő szelepeket, a berendezést teljesen le kell üríteni. Ennek elmulasztása a folyadék hőtágulását okozhatja, ami károsíthatja a berendezést, és személyi sérüléshez vezethet.**

**Nyomástartó berendezésekre vonatkozó európai irányelv (PED)**

Minden 0,5 bar-nál (g) magasabb belső nyomású és 25 mm-nél vagy 1 hüvelyknél nagyobb nyomástartó berendezés a nyomástartó berendezésekre vonatkozó európai irányelv (PED) hatálya alá tartozik.

- A használati utasítás „Műszaki adatok” fejezete tartalmaz a PED irányelvre vonatkozó utasításokat.
- A használati utasításban megadott termékek megfelelnek a 2014/34/EU EU irányelvnek.
- Minden Brooks átfolyásmérő az 1-es folyadékcsoporthoz tartozik.
- A 25 mm-nél vagy 1 hüvelyknél nagyobb termékek megfelelnek a PED I, II, vagy III kategóriának.
- A 25 mm-es illetve 1 hüvelykes vagy kisebb termékek az elfogadott mérnöki gyakorlatot (SEP) követik.

**Elektromágneses kompatibilitásra vonatkozó európai irányelv (EMC)**

A Brooks Instrument CE jelölést kiérdemelt (elektromos/elektronikus) berendezései sikeresen teljesítették az elektromágneses kompatibilitási követelményeket (2014/30/EU sz. EMC irányelv) vizsgálati tesztek.

Ugyanakkor különös figyelmet kell fordítani a CE jelölésű berendezésekhez felhasznált jelkábelek kiválasztására.

**A jelkábelek, kábelösszekötők, csatlakozók minősége:**

A Brooks Instrument magas minőségű kábeleket kínál, melyek megfelelnek a CE minősítés követelményeinek.

Amennyiben saját jelkábel alkalmaznak, olyat kell választani, amely 100%-os árnyékolással, teljes mértékben szűrt.

A „D” vagy „kör alakú” csatlakozóknak fémárnyékolóval árnyékoltnak kell lennie. Szükség esetén fém kábelösszekötőket kell alkalmazni a kábelcsűrő rögzítésére.

A kábelcsűrőt a fém házhoz vagy hüvelyhez kell csatlakoztatni és mindkét felén 360°-ban le kell árnyékolni. Az árnyékolásnak földelésben kell végződnie.

A kártyákhoz tartozó csatlakozók szabványosan nem fémesek. Az alkalmazott kábeleknek 100%-os árnyékolással szűrteknek kell lenniük, hogy megfeleljenek a CE minősítésnek.

Az árnyékolásnak földelésben kell végződnie.

Érintkező konfiguráció: Lásd a mellékelt kezelési utasítást.

**Elektrosztatikus kisülés (ESD)**

**▲ VIGYÁZAT: A készülék olyan alkatrészeket tartalmaz, melyek hajlamosak a sztatikus elektromosság okozta károsodásra. Be kell tartani a megfelelő eljárásokat a belső áramköri kártyák és eszközök eltávolítása, behelyezése vagy egyéb kezelése során.**

**Kezelési eljárás:**

1. A berendezést áramtalanítani kell.
2. A személyt földelni kell csuklópánttal vagy egyéb biztonságos és a célra alkalmas eszközzel, mielőtt áramköri kártyát vagy egyéb belső eszközt telepítene, venne ki, vagy állítana be.
3. A nyomtatott áramköri kártyákat vezetőképes csomagolásban kell szállítani. A kártyák kizárólag közvetlenül a behelyezés előtt vehetők ki a védőburkolatból. A kiszertelt kártyát haladéktalanul el kell helyezni a mozgatásra, raktározásra vagy a gyári visszaszállításra szolgáló védőcsomagolásba.

**Megjegyzések:**

Nem egyedi jelenség, hogy a készülékben elektrosztatikus kisülésre (ESD) érzékeny alkatrészek találhatók. A legtöbb korszerű elektronikus eszközben fémoxid technológiás alkatrészek (NMOS, SMOS stb.) találhatók. A tapasztalatok azt igazolják, hogy még kis mértékű sztatikus elektromosság is károsíthatja, vagy tönkretelheti ezeket az eszközöket. A károsodott alkatrészek, még ha látszólag megfelelően működnek is, kezdődő hibára utalnak.

## Brooks® VDM300 Vapor Delivery Module

## Italian

### Istruzioni fondamentali Leggerle subito!

La Brooks Instrument progetta, fabbrica e collauda i propri prodotti in maniera tale che siano conformi ai vari standard nazionali ed internazionali. Tali apparecchiature devono essere installate, messe in esercizio e tenute in manutenzione in maniera adeguata affinché operino in conformità alle loro normali specifiche di funzionamento. Le seguenti istruzioni devono essere rispettate ed inserite nel programma di tutela sul lavoro durante l'installazione, il funzionamento e la manutenzione dei prodotti Brooks Instrument.

- Per garantire un adeguato rendimento l'installazione, il funzionamento, l'aggiornamento, la programmazione e la manutenzione del prodotto devono essere eseguiti esclusivamente da personale specializzato.
- Leggere tutte le istruzioni prima dell'installazione, utilizzo e manutenzione del prodotto. Se questo manuale non è quello relativo al Vostro prodotto, cercare sul retro della copertina il distributore locale e contattarlo per ulteriori informazioni. Conservare il presente manuale per future consultazioni.

**⚠ ATTENZIONE: Non utilizzare questo strumento in condizioni che eccedono le specifiche riportate nel Manuale d'Uso. L'inosservanza può causare gravi lesioni alle persone e/o danni all'apparecchiatura.**

- Qualora le istruzioni del manuale non siano chiare, contattare un rappresentante della Brooks Instrument per chiarire il problema.
- Rispettare tutti gli avvisi, le istruzioni e gli avvertimenti riportati sull'apparecchiatura o forniti insieme ad essa.

**⚠ ATTENZIONE: prima di installare questo strumento, assicurarsi che sia in regola rispetto alle normative di sicurezza locali e nazionali. La non osservanza di questo avvertimento può procurare seri danni a persone e/o danneggiare sia lo strumento che le cose circostanti.**

- Installare l'apparecchiatura in base alle istruzioni riportate nel Manuale d'Uso e alle prescrizioni locali e nazionali in vigore. Collegare i prodotti esclusivamente ad un'adeguata sorgente di pressione ed alimentazione elettrica.
- Procedimento: (1) mettere lentamente sotto pressione il sistema. Aprire lentamente le valvole di servizio per evitare l'oscillazione del flusso. (2) Controllare che non ci siano perdite nei punti di connessione in entrata e in uscita del misuratore di flusso. Se non ci sono perdite, caricare il sistema alla pressione d'esercizio.
- Prima di effettuare manutenzione controllare che la linea di processo non sia sotto pressione. Se avete bisogno di pezzi di ricambio, il personale specializzato deve usare i pezzi di ricambio definiti dalla Brooks Instrument. Attività e pezzi di ricambio non autorizzati possono influire sul rendimento del prodotto e comprometterne il funzionamento in sicurezza. La sostituzione con pezzi di ricambio non originali può causare incendi, pericolo di scosse elettriche o funzionamento improprio.
- Tutti gli sportelli dell'impianto devono essere chiusi, le cappe di protezione devono essere al loro posto per evitare scosse elettriche e lesioni personali, tranne quando il personale specializzato esegue lavori di manutenzione.

**⚠ ATTENZIONE: In caso di apparecchiature in cui scorre un liquido, se per qualsiasi motivo bisogna chiudere le valvole d'entrata e d'uscita accanto all'apparecchiatura, allora si deve svuotare completamente l'apparecchiatura. L'inosservanza può causare la dilatazione termica del liquido che può danneggiare l'apparecchiatura e provocare lesioni alle persone.**

### Direttiva europea relativa alle apparecchiature a pressione (PED)

Ogni apparecchiatura a pressione con pressione interna maggiore di 0,5 bar (g) e più grande di 25 mm o di 1 pollice ricade nell'ambito della Direttiva Europea relativa alle apparecchiature a pressione (PED).

- Il capitolo „Dati tecnici“ del manuale contiene le disposizioni relative alla direttiva PED.
- I prodotti di misura descritti nel presente manuale sono conformi alla Direttiva UE 2014/34/EU.
- Ogni flussimetro Brooks appartiene al gruppo di fluidi 1.
- I prodotti di misura maggiori di 25 mm o di 1 pollice sono conformi alla categoria I, II o III della PED.
- I prodotti di misurazione minori di 25 mm o di 1 pollice rientrano nella categoria SEP (Sound Engineering Practice).

### Direttiva europea relativa alla compatibilità elettromagnetica (EMC)

Le apparecchiature (elettriche/elettroniche) Brooks Instrument dispongono del marchio CE ed hanno superato positivamente i test per i requisiti di compatibilità elettromagnetica (Direttiva EMC 2014/30/EU).

In ogni caso bisogna prestare particolare attenzione alla scelta dei cavi di segnale utilizzati per le apparecchiature con marchio CE.

#### Qualità dei cavi di segnale, dei pressacavi e dei connettori:

La Brooks Instrument offre cavi d'alta qualità conformi ai requisiti della certificazione CE.

Qualora vengano utilizzati cavi di segnale propri, devono essere scelti con schermatura al 100% e interamente filtrati.

I connettori „D“ o „rotondi“ devono essere schermati con schermatura metallica. In caso di necessità bisogna utilizzare pressacavi metallici di collegamento per fissare la schermatura del cavo.

La schermatura del cavo deve far contatto col guscio metallico o col pressacavo; il cavo deve essere schermato su entrambi i lati a 360°. La schermatura deve essere effettuata con messa a terra.

I connettori Card Edge normalmente non sono di metallo. I cavi utilizzati devono essere filtrati con schermatura al 100% per essere conformi alla marcatura CE.

La schermatura deve essere effettuata con messa a terra.

Configurazione pin: Vedi Manuale d'uso allegato.

### Scarica elettrostatica (ESD)

**⚠ ATTENZIONE: Il dispositivo contiene componenti elettronici che possono essere danneggiati da elettricità statica. Bisogna rispettare le adeguate procedure durante la rimozione, l'installazione o altra manovra delle schede del circuito elettrico interno.**

#### Procedura di manovra:

1. Togliere alimentazione elettrica all'apparecchiatura.
2. La persona deve essere collegata a terra con una cerniera o con altri strumenti di sicurezza e adeguati allo scopo prima di installare, togliere o impostare la scheda del circuito elettrico o altri dispositivi interni.
3. Le schede del circuito stampato devono essere spedite in contenitori conduttivi. Le schede devono essere tolte dal rivestimento protettivo esclusivamente prima dell'installazione. Le schede confezionate devono essere collocate immediatamente nell'imballaggio protettivo per la movimentazione, l'immagazzinamento o resa alla fabbrica.

#### Note:

È un fenomeno comune che nei dispositivi di questo tipo si trovino componenti sensibili alla scarica elettrostatica (ESD). Nella maggior parte degli strumenti elettronici moderni si trovano componenti tecnologici metallo-ossido (NMOS, SMOS, ecc.). Le esperienze dimostrano che l'elettrostaticità anche in piccola misura può danneggiare o rovinare gli strumenti. I componenti danneggiati, anche se all'apparenza funzionano correttamente, potrebbero manifestare il difetto rapidamente.



Latvian

## Svarīga instrukcija Pirms turpināt izlasiet!

„Brooks Instrument” projektē, ražo un pārbauda savus izstrādājumus atbilstoši daudziem nacionālajiem un starptautiskajiem standartiem. Lai nodrošinātu šo izstrādājumu turpmāku darbību atbilstoši noteiktajiem parametriem, tie ir pareizi jāuzstāda, jālieto un jāapkopj. Uzstādot, lietojot „Brooks Instrument” izstrādājumus un veicot to apkopi, ir jāievēro šie norādījumi un jāiekļauj tie jūsu drošības programmā.

- Lai nodrošinātu pienācīgu izstrādājuma sniegumu, izstrādājuma uzstādīšanu, lietošanu, atjaunināšanu, programmēšanu un apkopi uzticiet veikt tikai kvalificētam personālam.
- Pirms izstrādājuma uzstādīšanas, lietošanas un apkalpošanas izlasiet visus norādījumus. Ja šī instrukciju rokasgrāmata nav pareizā, izstrādājumam atbilstošā rokasgrāmata, lūdzu skat. aizmugurējo vāku, kur ir sniegta vietējā tirdzniecības biroja kontaktinformācija.
  - ▲ **BRĪDINĀJUMS! Nelietot instrumentu ārpus Instrukciju un lietošanas rokasgrāmatā norādītajiem parametriem. Šī brīdinājuma neievērošanas rezultātā var rasties traumas un/vai aprikojuma bojājumi.**
- Ja jūs nesaprotat kādu no instrukcijām, sazinieties ar „Brooks Instrument” pārstāvi un lūdziet izskaidrot to.
- Ievērojiet visus brīdinājumus, piesardzības mērus un instrukcijas, kas norādīti uz izstrādājuma vai piegādāti kopā ar to.
  - ▲ **BRĪDINĀJUMS. Pirms uzstādīšanas pārliecinieties, ka šim instrumentam ir nepieciešamie apstiprinājuma novērtējumi, lai atbilstu vietējiem un valsts kodeksiem. Šī brīdinājuma neizlasīšanas rezultātā var rasties nopietni personas savainojumi un/vai aprikojuma bojājumi.**
- Uzstādiet aprikojumu tā, kā tas norādīts attiecīgajā instrukciju rokasgrāmatā iekļautajā uzstādīšanas instrukcijā un atbilstoši piemērojamajām vietējām un nacionālajām normām. Pievienojiet visus izstrādājumus pareiziem elektriskajiem un spiediena avotiem.
- Lietošana: (1) Lēnām uzsāciet plūsmu sistēmā. Lai izvairītos no straujiem plūsmas kāpumiem, lēnām atveriet procesa vārstus. (2) Pārbaudiet, vai nav noplūdes ap plūsmas mērītāja iepļūdes un izplūdes savienojumiem. Ja noplūdes nav, uzstādiet sistēmā darba spiedienu.
- Pārliecinieties par to, lai pirms instrumenta tehniskās apkopes būtu likvidēts procesa līnijas spiediens. Ja ir nepieciešams veikt kādu daļu nomaiņu, nodrošiniet, lai tiktu izmantotas „Brooks Instrument” norādītās daļas un daļu nomaiņu veiktu kvalificēts personāls. Neatļautu daļu un procedūru izmantošana var ietekmēt izstrādājuma sniegumu un samazināt procesa drošību. Līdzīgu, bet ne identisku daļu nomaiņas lietošana var izraisīt ugunsgrēku, elektrisko traucējumu riskus un nepareizu izstrādājuma darbību.
- Nodrošiniet, lai būtu aizvērtas visas durvis un būtu pareizi uzstādīti visi aizsargpārsegumi, tādējādi novēršot elektrošoka un traumu risku. Izņēmums ir gadījumi, kad kvalificēts personāls veic ražojuma apkopi.
  - ▲ **BRĪDINĀJUMS! Ja šķidrās plūsmas ierīču tuvumā esošos iepļūdes un izplūdes vārstus kāda iemesla dēļ ir jāaizver, no ierīcēm ir jāizslēdz viss šķidrums. Pretējā gadījumā šķidrums var termiski izplesties, pārraut ierīci un radīt traumas.**

### Eiropas spiedieniekārtu direktīva (PED)

Uz visām spiedieniekārtām, kuru iekšējais spriegums pārsniedz 0,5 bar (g) un ir lielāks par 25 mm jeb 1" (collu), attiecas Eiropas spiedieniekārtu direktīva (PED).

- Šīs rokasgrāmatas tehnisko parametru nodaļā ir sniegtas a PED Direktīvu saistītās instrukcijas.
- Šajā rokasgrāmatā aprakstītie izstrādājumi atbilst EN Direktīvas 2014/34/EU prasībām.
- Visi „Brooks Instrument” plūsmas mērītāji ietilpst 1. šķidrumu grupā.
- Uz 25 mm jeb 1" (collu) maziem un mazākiem izstrādājumiem attiecas labas inženierijas prakse (SEP).
- 25 mm jeb 1" (collu) mazi vai mazāki izstrādājumi atbilst PED kategorijai I, II vai III.

### Eiropas elektromagnētiskās savietojamības direktīva (EMS)

„Brooks Instrument” (elektriskās/elektroniskās) iekārtas ar CE zīmi ir izturējušas pārbaudi un atzītas par atbilstošām Eiropas elektromagnētiskās savietojamības direktīvas (EMS) prasībām (EMS 2014/30/EU)

Tomēr, izvēloties signālkabeli, kas tiks lietots kopā ar CE marķējuma iekārtu, ir jāievēro īpaša uzmanība.

**Signālkabeļa, kabeļa blīvslēgu un savienotāju kvalitāte:**

„Brooks Instrument” piegādā augstas kvalitātes kabeļus, kas atbilst CE sertifikācijas tehniskajiem parametriem.

Ja jūs lietojat pats savu signālkabeli, tam ir jābūt pilnībā, 100% ekranizētam.

„D” un „apaļā” tipa savienotājiem ir jābūt aprīkoti ar metāla ekranizējumu. Ja nepieciešams, ir jāizmanto metāla blīvslēgi ar kabeļa ekranizējuma skavojumu.

Kabeļa ekranizējumam ir jābūt savienotam ar metāla apvalku un abās pusēs aizsargātam 360 grādu diapazonā.

Ekranizējumam ir jābeidzas pie iezemējuma.

„Card Edge” savienotāji standarta izpildījumā ir nemetāla. Kabeļiem ir jābūt pārklātiem ar 100% ekranizējumu, lai tie atbilstu CE sertifikācijas prasībām.

Ekranizējumam ir jābeidzas pie iezemējuma.

Attiecībā uz tapu konfigurāciju: skat. pievienoto instrukciju rokasgrāmatu.

### ESD (elektrostatiskā izlāde)

▲ **IEVĒROT PIESARDZĪBU! Šis instruments satur elektriskos komponentus, kas ir jutīgi pret statisko elektrību. Izņemot un uzstādot iekšējās ķēdes plātes un ierīces vai kā citādi darbojoties ar tām, ir jāievēro noteikta darba kārtība.**

**Darba kārtība:**

1. Iekārta jāatslēdz no barošanas.
2. Pirms jebkādas drukātas shēmas kartes vai citas iekšējās ierīces uzstādīšanas, izņemšanas vai regulēšanas personālam, kas veiks šos darbus, ir jābūt iezemētam, piem., izmantojot aprocēs vai citus drošus, piemērotus līdzekļus.
3. Drukātas shēmas kartes ir jātransportē vadošā iepakojumā. Plāksnes no aizsargkorpusa drīkst izņemt tikai tieši pirms uzstādīšanas. Transportējot, uzglabājot vai atgriežot rūpnīcā, izņemtās plāksnes ir nekavējoties jāievieto aizsargiepakojumā.

**Komentāri**

Instruments nav unikāls tajā aspektā, ka tas satur pret ESD (elektrostatisko izlādi) jutīgus komponentus. Vairākums mūsdienu elektroiekārtu satur komponentus, kuru ražošanā izmantota metāla oksīdu tehnoloģijas (NMOS, SMOS u.c.). Pieredze rāda, ka pat neliels daudzums statiskās elektrības var nodarīt bojājumus šādām ierīcēm vai pilnībā sabojāt tās. Bojātie komponenti pat tad, ja tie šķietami darbojas pareizi, ir pakļauti ātrākam atteicei.

## Brooks® VDM300 Vapor Delivery Module

## Lithuanian

**Pagrindinės instrukcijos****Perskaitykite prieš tęsdami!**

„Brooks Instrument“ projektuoja, gamina ir išbando savo gaminius, kad jie atitiktų įvairius nacionalinius ir tarptautinius standartus. Šie gaminiai turi būti tinkamai montuojami, eksploatuojami ir prižiūrimi, kad ir toliau veiktų pagal jiems būdingus techninius parametrus. Toliau pateiktų nurodymų reikia laikytis ir įtraukti juos į saugos programą montuojant, eksploatuojant ir prižiūrint „Brooks Instrument“ gaminius.

- Siekiant užtikrinti tinkamą veikimą, montuoti, eksploatuoti, naujinti, programuoti ir prižiūrėti gaminį turi tik kvalifikuoti darbuotojai.
- Perskaitykite visus nurodymus prieš montuodami, eksploatuodami ir prižiūradami gaminį. Jei gavote netinkamą instrukciją, galiniame jos viršelyje ieškokite vietinės prekybos atstovybės kontaktinės informacijos. Neišmeskite šios instrukcijos, jos gali prireikti ateityje.

**⚠️ ĮSPĖJIMAS: nenaudokite šio prietaiso viršydami instrukcijoje ir eksploatacijos vadove nurodytus techninius duomenis. Nesilaikydami šio įspėjimo galite sunkiai susižeisti ir (arba) sugadinti įrangą.**

- Jei nesuprantate kokių nors nurodymų, kreipkitės į „Brooks Instrument“ atstovą, kad paaiškintų.
- Paisykite visų įspėjimų ir nurodymų, pažymėtų ant gaminio arba pateiktų su juo.

**⚠️ ĮSPĖJIMAS: prieš montuodami įsitinkite, kad ši įrangą atitinka vietinius ir nacionalinius teisės aktus. Nepaisant šio įspėjimo gali būti sužeisti žmonės ir (arba) pažeista įrangą.**

- Įrangą montuokite taip, kaip nurodyta atitinkamos instrukcijos montavimo nurodymuose arba taikomuose vietiniuose ar nacionaliniuose teisės aktuose. Visus gaminius junkite prie tinkamų elektros ir slėgio šaltinių.
- Naudojimas: (1) lėtai įjunkite srautą į sistemą. Lėtai atidarykite proceso vožtuvus, kad išvengtumėte srauto antplūdžių. (2) Patikrinkite, ar nėra nuotėkių aplink srauto matuoklio įleidimo ir išleidimo jungtis. Jei nuotėkių nėra, sukurkite sistemoje darbinį slėgį.
- Prieš atlikdami priežiūros darbus būtina pašalinti slėgį proceso linijoje. Jei reikia pakeisti dalis, užtikrinkite, kad kvalifikuoti darbuotojai naudotų „Brooks Instrument“ nurodytas pakaitines dalis. Naudojant netinkamas dalis ir netinkamai atliekant procedūras, gali pablogėti gaminio veikimas ir gali kilti pavojus naudojimo proceso saugai. Naudojant tik panašiai atrodančius pakaitalus gali kilti gaisro ar elektros smūgio pavojus arba gaminyje gali veikti netinkamai.
- Užtikrinkite, kad visos įrangos durtelės būtų uždarytos, o apsauginiai dangčiai uždėti, kad išvengtumėte elektros smūgio ir sužeidimų, išskyrus, kai kvalifikuoti darbuotojai atlieka priežiūros darbus.

**⚠️ ĮSPĖJIMAS: naudojant skysto srauto įrenginius, jei dėl kokios nors priežasties prireikia uždaryti šalia įrenginio esančius įleidimo ir išleidimo vožtuvus, iš įrenginio reikia išleisti visą skystį. To nepadarus galimas šiluminis skysčio plėtimasis, galintis sugadinti įrenginį ir sužeisti žmones.**

**Europos slėginės įrangos direktyva (PED)**

Visa slėginė įrangą, kurios vidinis slėgis didesnis nei 0,5 bar (g), o dydis didesnis nei 25 mm arba 1 col., yra reglamentuojama Slėginės įrangos direktyvos (PED).

- Šios instrukcijos dalyje „Techniniai duomenys“ pateikiami nurodymai, susiję su PED direktyva.
- Šioje instrukcijoje aprašyti gaminiai atitinka Europos Sąjungos direktyvą 2014/34/EU.
- Visi „Brooks Instrument“ srauto matuokliai priklauso 1 skysčių grupei.
- Didesni nei 25 mm arba 1 col. gaminiai atitinka PED I, II arba III kategoriją.
- 25 mm arba 1 col. ar mažesni gaminiai atitinka tinkamą inžinerijos praktiką (SEP).

**Europoje taikomi elektromagnetinio suderinamumo (EMS) reikalavimai**

CE ženklu pažymėta „Brooks Instrument“ (elektrinė / elektroninė) įrangą buvo sėkmingai išbandyta pagal elektromagnetinio suderinamumo reikalavimus (EMS direktyvą 2014/30/EU).

Tačiau ypač atidžiai reikia rinktis signalizavimo kabelį, kuris bus naudojamas su CE ženklu pažymėta įrangą.

**Signalizavimo kabelio, kabelių rieboščių ir jungčių kokybė:**

„Brooks Instrument“ tiekia kokybiškus kabelius, kurie atitinka CE sertifikavimo specifikacijas.

Jei naudojate savo signalizavimo kabelį, jis turi būti visiškai ir visas ekranuotas 100 % ekranu.

Naudojamos „D“ arba „apskrito“ tipo jungtys turi būti ekranuotos metaliniu ekranu. Jei taikoma, reikia naudoti metalinius kabelių rieboščių, užtikrinančius kabelio ekranu suspaudimą.

Kabelio ekraną reikia jungti prie metalinio apvalkalo ar rieboščių ir ekranuoti abiejuose galuose 360 laipsnių.

Ekranas turi užsibaigti žeminiu.

Standartinės kraštinės jungtys yra nemetalinės. Naudojami kabeliai turi būti ekranuoti 100 % ekranu, kad atitiktų CE sertifikavimą.

Ekranas turi užsibaigti žeminiu.

Keturių kontaktų konfigūracija: žr. pridėtą instrukciją.

**ESD (elektrostatinis išlydis)**

**⚠️ PERSPĖJIMAS: šiame prietaise yra elektroninių komponentų, kuriuos gali sugadinti statinė elektra. Išimant ar įdedant vidines spausdintines plokštes ar įrenginius, arba atliekant su jomis kitus darbus, reikia laikytis tinkamų darbo procedūrų.**

**Darbo procedūra:**

1. Atjunkite įrenginio maitinimą.
2. Darbuotojai turi pasirūpinti žeminiu naudodami riešo juostelę ar kitas saugias tinkamas priemones prieš įdėdami, išimdami ar reguliuodami bet kokią spausdintinės plokštės kortelę ar kitą vidinį komponentą.
3. Spausdintinės plokštės kortelės reikia transportuoti laidžiamame konteineryje. Neleidžiama išimti plokštės iš apsauginio dėklo, nebent prieš pat įdėjimą. Išimtas plokštės reikia nedelsiant įdėti į apsauginį konteinerį, kuriame jos bus transportuojamos ar saugomos, arba grąžinti į gamyklą.

**Pastabos**

Šis instrumentas nėra unikalus dėl jame esančių ESD (elektrostatinio išlydžio) jautrių komponentų. Daugelyje šiuolaikinių elektroninių gaminių yra komponentų, kuriuose naudojama metalo oksidų technologija (NMOS, SMOS ir pan.). Patirtis rodo, kad net ir mažas statinės elektros kiekis gali pakenkti tokiems gaminiams ar juos sugadinti. Sugadinti komponentai, net jei atrodo, kad jie veikia tinkamai, greitai sugenda.

Polish

**Niezbędne zalecenia**

**Prosimy przeczytać przed rozpoczęciem użytkowania!**

Brooks Instrument projektuje, wytwarza i testuje swoje produkty tak, aby spełniały wymagania licznych norm krajowych i międzynarodowych. Produkty te muszą być poprawnie instalowane, obsługiwane oraz konserwowane, aby zapewnić ich prawidłowe działanie zgodnie ze specyfikacją techniczną. Podczas instalowania, obsługiwanie i konserwowania produktów firmy Brooks Instrument należy przestrzegać następujących zaleceń:

- Aby zapewnić właściwe działanie sprzętu, instalacja, obsługa, aktualizacje, programowanie i konserwacja powinny być wykonywane przez przeszkolony personel.
- Przed instalacją, obsługą i czynnościami serwisowymi należy zapoznać się ze wszystkimi zaleceniami producenta. Aby uzyskać instrukcję obsługi odpowiednią dla danego sprzętu, należy skontaktować się z lokalnym przedstawicielem handlowym producenta. Instrukcję obsługi należy zachować do późniejszego użycia.

**▲ OSTRZEŻENIE: Nie wolno przekraczać podanych w instrukcji zakresów działania urządzenia. Nieprzestrzeganie tego zalecenia może doprowadzić do poważnego zagrożenia życia lub zdrowia personelu i / lub uszkodzenia sprzętu.**

- Jeżeli jakieś zalecenia w instrukcji obsługi urządzenia są niezrozumiałe, prosimy o skontaktowanie się z przedstawicielem firmy Brooks Instrument, aby wyjaśnić problem.
- Należy przestrzegać wszystkich ostrzeżeń, uwag i zaleceń umieszczonych na produkcie lub do niego dołączonych

**▲ OSTRZEŻENIE: Przed rozpoczęciem instalacji należy sprawdzić, czy wymagana specyfikacja niniejszego urządzenia zgodna jest z miejscowymi i krajowymi normami.**

**Zignorowanie tego ostrzeżenia może spowodować poważne obrażenia ciała i/lub uszkodzenie sprzętu.**

- Instalację urządzenia należy przeprowadzić zgodnie z zaleceniami zawartymi w instrukcji instalacji oraz z obowiązującymi lokalnymi i narodowymi oznaczeniami. Wszystkie urządzenia można podłączać wyłącznie do odpowiednich źródeł energii elektrycznej oraz ciśnienia.
- Pierwsze czynności obsługowe: (1) Należy powoli włączyć przepływ w instalacji. Następnie powoli otworzyć zawory robocze tak, aby uniknąć wahań przepływu. (2) Należy teraz sprawdzić, czy nie występują nieszczelności przy podłączeniach wejściowym i wyjściowym miernika przepływu. Jeżeli nie ma żadnych nieszczelności, można zwiększyć ciśnienie w instalacji do wartości ciśnienia roboczego.
- Przed przystąpieniem do czynności serwisowych należy upewnić się, że ciśnienie robocze jest odłączone. Jeżeli konieczna jest wymiana części zamiennych, należy zawsze stosować części zamienne specyfikowane przez firmę Brooks Instrument a czynności ich wymiany powinin w każdym przypadku dokonywać przeszkolony personel. Stosowanie nieautoryzowanych części i procedur serwisowych może niekorzystnie wpłynąć na działanie produktu oraz zagrozić bezpieczeństwu instalacji. Korzystanie z podobnie wyglądających zamienników może doprowadzić do pożaru, porażenia prądem lub nieprawidłowego działania urządzenia.
- Należy upewnić się, że wszystkie otwory urządzenia są zamknięte a osłony umocowane na swoich miejscach, aby zapobiec obrażeniom ciała lub porażeniu prądem personelu. Zalecenie to nie dotyczy przeszkolonego pracownika wykonującego prace serwisowe lub konserwacyjne.

**▲ OSTRZEŻENIE: W przypadku mierników przepływu cieczy, jeżeli znajdujące się na nich zawory wejściowe i wyjściowe mają być z jakiegos powodu zamknięte, to urządzenie musi zostać całkowicie opróżnione z ciekłego medium. Niedopełnienie tego zalecenia może doprowadzić do termicznego zwiększenia objętości cieczy, co z kolei może spowodować uszkodzenie urządzenia i obrażenia personelu.**

**Europejska dyrektywa dotycząca urządzeń ciśnieniowych (PED)**

Wszystkie urządzenia ciśnieniowe pracujące przy ciśnieniu wewnętrznym względnym większym niż 0,5 bara i wielkości powyżej 25 mm lub 1 cala podlegają dyrektywie europejskiej dotyczącej urządzeń ciśnieniowych (PED).

- Rozdział „Specyfikacja techniczna” niniejszej instrukcji zawiera zalecenia dotyczące dyrektywy PED.
- Produkty opisane w tej instrukcji są zgodne z dyrektywą EN 2014/34/EU.
- Wszystkie mierniki przepływu firmy Brooks Instrument należą do 1. grupy cieczy.
- Produkty o wielkości powyżej 25 mm lub 1 cala należą do kategorii I, II lub III dyrektywy PED.
- Produkty o wielkości 25 mm lub 1 cala lub mniejsze podlegają zaleceniom „Uznanej Praktyki Inżynierskiej” (SEP).

**Europejska dyrektywa dotycząca kompatybilności elektromagnetycznej (EMC)**

Urządzenia elektryczne / elektroniczne firmy Brooks Instrument posiadające oznaczenie CE, przeszły pozytywnie testy pod kątem spełniania przez nich wymogów kompatybilności elektromagnetycznej (Dyrektywa EMC 2014/30/EU).

Jednakże szczególną uwagę należy poświęcić przy doborze przewodów sygnałowych, które mają być stosowane z urządzeniami ze znakiem CE.

**Jakość przewodu sygnałowego, dławic oraz złączy przewodu:**

Firma Brooks Instrument dostarcza wysokiej jakości przewody, które spełniają wymagania zawarte w specyfikacji dla certyfikatu CE.

Jeżeli stosuje się własne przewody sygnałowe, to powinny one być całości w pełni ekranowane.

Złącza typu „D” lub okrągłe powinny zawierać metalowy ekran. Jeśli to możliwe, należy stosować metalowe dławice przewodu zapewniające mocowanie jego ekranu.

Ekran przewodu powinien być połączony z metalową osłoną lub dławicą zapewniając całkowite, dookólne ekranowanie na obu końcach przewodu.

Ekran przewodu powinien być uziemiony.

Złącza krawędziowe są standardowo niemetaliczne. Stosowane przewody muszą być w pełni ekranowane zgodnie z certyfikatem CE.

Ekran przewodu powinien być uziemiony.

Konfiguracja styków jest podana w niniejszej instrukcji obsługi.

**Wyładowania elektrostatyczne (ESD)**

**▲ UWAGA: Urządzenie zawiera części elektroniczne podatne na uszkodzenia spowodowane ładunkami elektrostatycznymi. Przy obchodzeniu się z wewnętrznymi podzespołami i częściami elektronicznymi należy przestrzegać następujących zasad postępowania:**

1. Należy odłączyć zasilanie od urządzenia.
2. Osoba wykonująca czynności musi zostać uziemiona za pomocą opaski na przegubie dłoni lub w inny, bezpieczny sposób, zanim przystąpi do instalacji, wyjęcia lub regulacji obwodów drukowanych lub innych wewnętrznych podzespołów elektronicznych urządzenia.
3. Obwody drukowane należy transportować w przewodzącym pojemniku. Płytki drukowane należy wyjmować z opakowania ochronnego bezpośrednio przed ich montażem. Wymontowane płytki należy niezwłocznie umieścić w opakowaniu ochronnym służącym do transportowania, składowania lub odsyłania do producenta.

**Uwagi:**

Fakt, że urządzenie zawiera części nieodporne na wyładowania elektrostatyczne (ESD) jest rzeczą normalną. Większość nowoczesnych urządzeń elektronicznych zawiera komponenty wykonane w technologii tlenków metali (NMOS, SMOS itp.). Jak pokazuje praktyka, nawet niewielkie wyładowanie elektrostatyczne może uszkodzić lub zniszczyć takie urządzenie. Uszkodzone części, nawet jeżeli na pozór działają poprawnie, szybko doprowadzają do nieprawidłowej pracy urządzenia.



## Brooks® VDM300 Vapor Delivery Module

## Portuguese

### Instruções Básicas Ler antes de proceder!

A Brooks Instrument projecta, fabrica e testa os seus produtos de forma a satisfazer numerosas normas nacionais e internacionais. Estes equipamentos devem ser instalados, utilizados e mantidos de forma adequada, e devem funcionar dentro da sua gama de utilização. As instruções seguintes devem ser, durante a instalação, uso e/ou manutenção dos equipamentos da Brooks Instrument, apreendidas e integradas no plano de protecção e segurança no trabalho.

- Para assegurar o desempenho adequado, a instalação, exploração, actualização e/ou manutenção do equipamento deve ser realizada, exclusivamente, por pessoal qualificado.
- Antes de instalar, utilizar e/ou executar operações de manutenção devem ser lidas todas as instruções do equipamento. No caso do presente manual não ser apropriado procure, na capa traseira, o distribuidor mais próximo e contacte-o para obter informações adicionais. Guarde este manual para futura referência.

**▲ ATENÇÃO: não sujeite o equipamento a condições fora das gamas de serviços indicadas. Ao não respeitar esta advertência poderá provocar avarias no equipamento e/ou danos pessoais.**

- Se as instruções deste manual não estiverem suficientemente claras, contacte o representante Brooks Instrument para esclarecer as suas dúvidas.
- Tenha sempre presente todas as advertências, apelos e instruções indicadas no equipamento e/ou fornecidas junto com o mesmo.

**▲ AVISO: Antes de proceder à instalação, certifique-se de que este instrumento está em conformidade com as categorias de homologação exigidas pelas regulamentações locais e nacionais. O incumprimento pode resultar em lesões pessoais graves e/ou danos no equipamento.**

- A instalação do equipamento deverá ser efectuada cumprindo todas as instruções indicadas no manual assim como as normas e regulamentos locais e nacionais vigentes. Ligue o equipamento exclusivamente a fontes de energia eléctrica e/ou pneumática adequadas.
- Procedimento: (1) Pressurize lentamente o sistema. Abra lentamente as válvulas para evitar variações bruscas de caudal. (2) Verifique se há fugas nas ligações de entrada e saída do medidor de caudal. Se não detectar fugas, poderá colocar o sistema à pressão de trabalho.
- Antes de efectuar qualquer operação de manutenção verifique sempre a possibilidade do equipamento estar sob pressão. No caso de ser preciso substituir peças, estas devem ser as recomendadas pela Brooks Instrument e o trabalho de substituição deverá ser efectuado por técnicos qualificados. Procedimentos e peças não conformes poderão alterar o desempenho do equipamento, danificá-lo ou colocar em risco a sua segurança ou de outros. Substituir peças por outras não originais, meramente semelhantes, poderá originar choques eléctricos, fogo ou em funcionamento inadequado.
- Deverá manter o equipamento intacto e fechado, verificando se as coberturas de protecção estão nos seus lugares devidos, de forma a evitar choques eléctricos e/ou danos pessoais, excepto no caso de se tratar de um técnico qualificado e se estiver a executar trabalhos de manutenção.

**▲ ATENÇÃO: Se por qualquer razão for necessário fechar as válvulas a montante e jusante do equipamento, tenha em atenção que o mesmo deverá ser previamente esvaziado do fluido que o atravessa. Esta obrigação surge do facto de existir a possibilidade de ocorrer dilatação térmica do líquido, no interior do aparelho, podendo provocar danos pessoais ou materiais graves.**

### Directiva Europeia para equipamentos sob pressão (PED)

Todos os equipamentos sujeitos a pressão interior superior a 0,5 bar (g) e com calibre superior a 25 mm (1 polegada) estão sob a vigência da directiva europeia de equipamentos sob pressão (PED).

- O capítulo "Dados técnicos" do manual contém instruções relativas à Directiva PED.
- O produto objecto deste manual satisfaz a directiva 2014/34/EU da UE.
- Os caudalímetros Brooks pertencem ao grupo 1 de fluidos.
- Os produtos com calibre superior a 25 mm (1 polegada) pertencem às categorias PED I, II, ou III.
- Os produtos de 25 mm (1 polegada) ou menores seguem as "Boas regras de engenharia" (SEP).

### Directiva Europeia sobre Compatibilidade electromagnética (EMC)

Os equipamentos (eléctricos/electrónicos) da Brooks Instrument que têm a marcação CE passaram os testes comprovativos dos requisitos de compatibilidade electromagnética (Directiva EMC número 2014/30/EU).

todavia, ao utilizar os aparelhos compete-lhe a escolha dos cabos de sinal adequados para os equipamentos com marcação CE

#### Qualidade dos cabos de sinal, buçins e conectores:

A Brooks Instrument fornece cabos de alta qualidade que cumprem todos os requisitos da marcação CE.

No caso de utilizar os seus próprios cabos de sinal, assegure uma blindagem a 100%.

Os conectores do tipo "D" ou "circular" têm que ser blindados por uma malha metálica. Se precisar de usar buçins, estes têm que permitir a crimpagem da malha/blindagem do cabo.

A blindagem do cabo deve ser ligada ao corpo metálico ou bocal e assegurando a blindagem em 360°. A blindagem deve terminar numa ligação à terra.

Os conectores ligados a cartões serão, em geral, não-metálicos. Os cabos utilizados devem ter fita de blindagem a 100% para satisfazer a marcação CE.

A blindagem, deverá terminar numa ligação à terra.

**Atribuição de pinos:** Veja as instruções de operação anexas.

### Descarga Electrostatica (ESD)

**▲ ATENÇÃO: Alguns componentes deste equipamento são susceptíveis à acção da electricidade estática, podendo ficar danificados. Ao remover, colocar ou manipular placas de circuitos electrónicos deverá ter em atenção os seguintes procedimentos:**

1. Desligar o equipamento da rede.
2. O utilizador, antes de qualquer intervenção que envolva os cartões de circuitos ou outros dispositivos internos, terá que se ligar à terra por meio dum bracelete de pulso ou outro dispositivo adequado.
3. Os circuitos impressos deverão ser transportados numa embalagem condutiva. Os cartões só deverão ser retirados da embalagem protectora imediatamente antes da sua inserção. O cartão retirado deverá ser recolocado imediatamente na embalagem protectora que servirá para o seu transporte, armazenagem ou retorno a fábrica.

#### Observações:

Tenha presente que este equipamento poderá não ser o único objecto capaz de ser portador de peças sensíveis a descargas electrostáticas (ESD).

Na maioria dos dispositivos electrónicos Brooks encontram-se peças de tecnologia de óxidos metálicos (NMOS, SMOS, etc.). A experiência mostra que até pequenas quantidades de electricidade estática são capazes de danificar ou destruir esses dispositivos. Os componentes danificados, embora inicialmente funcionem aparentemente bem, acabam por ter falhas prematuramente.

Romanian

## Indicații de referință

### Citiți-le întâi pe acestea!

Brooks Instrument își proiectează, produce și testează produsele într-un mod ce respectă un mare număr de standarde autohtone și internaționale. Aceste instalații trebuie amplasate, exploatate și întreținute corespunzător, pentru ca în toate situațiile, domeniul lor de lucru să corespundă operării normale. În ceea ce privește instalarea, operarea și întreținerea produselor Brooks Instrument, indicațiile de mai jos trebuie respectate și trebuie introduse în programul de protecția muncii.

- Pentru garantarea prestației corecte, instalarea, operarea, actualizarea, programarea și întreținerea produsului poate fi realizată doar de către personal calificat.
- Instrucțiunile de instalare ale produsului trebuie citite integral, înainte de punerea în serviciu și exploatarea sa. În măsura în care ediția acestui manual nu este cea adecvată, identificați pe ultima copertă coordonatele distribuitorului local și pentru lămuriri suplimentare adresați-vă acestuia. Păstrați acest manual pentru referințe ulterioare.

**⚠ ATENȚIE: Nu utilizați instalația în afara intervalului de funcționare indicat în instrucțiunile de operare. Nerespectarea acestui lucru se poate solda cu răni grave de persoane sau defectarea instalației.**

- În măsura în care indicațiile cărții mașinii nu sunt suficiente de lămuritoare, luați legătura cu reprezentantul Brooks Instrument pentru clarificarea problemei.
- Păstrați toate avertismentele, avizele și instrucțiunile livrate odată cu instalația sau inscripționate pe aceasta.

**⚠ AVERTISMENT: Înainte de instalare, asigurați-vă că valorile nominale ale acestui instrument respectă codurile naționale. Nerespectarea acestui avertisment poate avea drept rezultat răni personale grave și/sau defectarea echipamentelor.**

- Efectuați instalarea echipamentului în conformitate cu indicațiile de instalare corespunzătoare, respectiv cu respectarea prevederilor naționale. Echipamentul se conectează exclusiv la surse de energie electrică și de presiune corespunzătoare.
- Succesiune: (1) Presurizați lent instalația. Deschideți încetul cu încetul supapa de funcționare pentru evitarea fluctuațiilor de flux. (2) Controlați dacă nu sunt prelingerii la intrarea sau ieșirea debitmetrului de branșare. Dacă nu sunt scurgeri, presurizați instalația la presiunea de lucru.

- Înaintea exploatării/ întreținerii, verificați neapărat dacă conducta uzinală nu este sub presiune. În măsura în care este nevoie de piese de schimb, este neapărat necesar ca manevrarea pieselor de schimb să fie făcută de personal cu calificare profesională agreat de Brooks Instrument. Utilizarea altor piese de schimb decât cele originale și licențiate poate avea efecte asupra performanțelor instalației și asupra siguranței sale în exploatare. Utilizarea de piese asemănătoare de substituie poate avea ca rezultat pericol de incendiu și electrocutare.
- În toate cazurile toate ușile instalației trebuie să fie închise, cuștile de protecție să fie puse la locurile lor, pentru evitarea electrocutării și rănirii de persoane, exceptând situațiile când un specialist efectuează lucrări de întreținere.

**⚠ ATENȚIE: În cazul instalațiilor cu flux de fluide, dacă din orice motiv este necesară închiderea valvelor de intrare și ieșire, limitrofe instalației, instalația trebuie complet golită. Neglijarea acestui lucru poate avea ca efect dilatarea termică a fluidului, care poate defecta instalația și poate produce răni de persoane.**

## Directiva europeană pentru instalațiile sub presiune (PED)

Toate instalațiile și sistemele presurizate ce se află sub presiuni interne ce depășesc 0,5 mbar (g) și au mai mult de 25 mm sau 1 țol, cad sub incidența noimei europene corespunzătoare (PED).

- La capitolul "Date tehnice" din cartea mașinii se găsesc indicațiile corespunzătoare directivei PED.
- Produsele menționate în cartea mașinii corespund directivei 2014/34/EU EU.
- Toate debitmetrele Brooks corespund clasei 1 de fluide.
- Produsele mai mari de 25 mm sau 1 țol corespund categoriei PED I, II sau III.
- Produsele mai mici de 25 mm sau 1 țol se conformează practicii ingineresti acceptate (SEP).

## Directiva europeană privitoare la compatibilitatea electromagnetică (EMC).

Instalațiile (electrice /electronice) ce poartă marca Brooks Instrument CE îndeplinesc cu succes cerințele testelor de verificare ale compatibilității electromagnetice (Cf. directivelor europene EMC cu nr. 2014/30/EU).

În același timp trebuie acordată o atenție deosebită la alegerea cablurilor de semnalizare utilizate pentru instalațiile ce poartă marca CE.

### Calitatea cablurilor de semnalizare, a legăturilor prin cablu și a conectoarelor:

Brooks Instrument oferă cabluri de calitate ridicată, care corespund cerințelor calitative ale CE.

În măsura în care folosiți cabluri proprii, trebuie alese acelea care sunt 100% ecranate și prevăzute cu filtre

Conectoarele „D” sau cele „circulare” trebuie să dispună de ecrane metalice. În caz de nevoie trebuie folosite conectoare metalice pentru montarea filtrelor de cablu.

Filtrul de cablu trebuie conectat la carcasa metalică sau manșon și în ambele cazuri trebuie asigurată ecranarea la 360°. Ecranarea trebuie terminată cu o legare la pământ.

Conform standardului, conectoarele aparținând plăcilor electronice nu sunt metalice. Cablurile folosite trebuie să fie 100% ecranate și prevăzute cu filtre pentru a corespunde clasificării CE.

Ecranarea trebuie terminată cu o legare la pământ.

Configurație de contact: Vezi instrucțiunile de operare atașate.

## Descărcare electrostatică (ESD)

**⚠ ATENȚIE: Instalația include piese care sunt predispuse la defectare sub influența electricității statice. Trebuie respectate metodele corespunzătoare de extragere, instalare sau alte manipulări ale circuitelor electronice.**

### Procedură de manipulare:

1. Instalația trebuie scoasă de sub tensiune.
2. Înaintea de inserarea, scoaterea sau reglarea vreunei cartele electronice, sau a altui dispozitiv intern, persoana trebuie să se lege la pământ cu banda pentru articulația mâinii sau alte dispozitive de siguranță disponibile pentru acest scop.
3. Cartelele cu cablaje electronice imprimate trebuie transportate în ambalaje anti-electrostatice (conductoare). Cartelele se pot scoate din ambalaj, doar nemijlocit înaintea așezării lor. Cartela demontată trebuie pusă neîntârziat în ambalajul de protecție în vederea transportării, a depozitării sau returnării la producător.

### Ⓛbservații:

În echipamente se găsesc adesea componente sensibile la descărcare electrostatică (ESD). Majoritatea echipamentelor moderne includ componente electronice realizate în tehnologie metal-oxid semiconductor (MOS, SMOS, etc.) Experiența a dovedit că acestea pot fi afectate sau deteriorate chiar de energii electrostatice de slabă intensitate. Componentele defectate, cu toate că în aparență sunt funcționale, duc în timp la defecțiuni incipiente.

## Brooks® VDM300 Vapor Delivery Module

## Slovak

## Základné príkazy

### Prečítať pred inštaláciou!

Brooks Instrument svoje výrobky projektuje, vyrába a testuje takým spôsobom, aby tieto vyhovel domácom aj medzinárodným normám. Tieto zariadenia je potrebné predpísaným spôsobom inštalovať, prevádzkovať a udržiavať, na zabezpečenie ich spoľahlivej a normálnej prevádzky v celom pracovnom rozsahu. Nižšie uvedené príkazy je potrebné dodržiavať a začleniť do programu bezpečnostných predpisov v priebehu inštalácie, prevádzky a údržby výrobkov Brooks Instruments.

- V záujme zabezpečenia vyhovujúceho výkonu inštaláciu, prevádzku, programovanie, aktualizáciu a údržbu zariadení má vykonávať výlučne odborne kvalifikovaný personál.
- Pred inštaláciou, prevádzkou a servisom zariadení je potrebné prečítať všetky príkazy. Ak táto príručka nie je správna, tak na zadnej strane treba nájsť miestneho distribútora, kontaktovať ho pre ďalšie informácie. Pre neskoršie informácie uschovajte príručku.

**▲ UPOZORNENIE: Neprevádzkovať zariadenie v rozsahu mimo rozsahu uvedenom v prevádzkovej príručke. Porušenie tohto oznámenia môže mať za následok ťažkú ujmu na zdraví a vedie k poškodeniu zariadenia.**

- Ak príkazy v návode nie sú jednoznačné, kontaktujte zástupcu Brooks Instrument na objasnenie problémov.
- Dodržujte všetky upozornenia, príkazy a usmernenia uvedené na zariadení, alebo s ním dodané.

**▲ VAROVANIE: pred montážou sa uistite, že toto zariadenie disponuje potrebnými klasifikáciami povolení, ktoré spĺňajú miestne a národné predpisy. Nedodržanie tohto varovania môže mať za následok vážne zranenia osôb alebo poškodenie zariadenia.**

- Zariadenia inštalujte podľa návodu uvedeného v príkaze na inštaláciu, v súlade s miestnymi a národnými predpismi. Zariadenie pripojte výlučne len na vyhovujúci elektrický a tlakový zdroj
- Postup: (1) Pomaly natlakujte systém. Prevádzkový ventil otvorte pomaly na zamedzenie kolísania prietoku. (2) Prekontrolujte tesnosť vstupného a výstupného zapojenia prietokomeru. Keď nie je presakovanie, spoje sú tesné, naplniť systém na prevádzkový tlak.
- Pred vykonávaním servisných prác kontrolovať, či systém nie je pod tlakom. V prípade, že je potrebná výmena súčiastky, výmenu dielov, určených Brooks Instrument musí vykonať kvalifikovaná osoba. Použitie nepovolených dielov a vykonávanie nepovolených aktivít ohrozujú bezpečnosť prevádzky a majú negatívny vplyv na výkon zariadenia. Nahradenie súčiastok len podobnými komponentmi môže mať za následok požiar, úraz elektrickým prúdom alebo nedostatočnú funkciu zariadenia
- Všetky ochranné kryty, dvierka zariadenia majú byť zatvorené na zabezpečenie ochrany proti úrazu elektrickým prúdom a proti poraniam obsluhy. Výnimku tvorí vykonávanie údržby kvalifikovaným odborníkom.

**▲ UPOZORNENIE: Pri zariadeniach s prietokom kvapalín, keď z akéhokoľvek dôvodu je nutné uzavrieť vstupné a výstupné ventily, zariadenie je potrebné úplne vyprázdniť. Zanedbanie vypúšťania má za následok poškodenie zariadenia s možnosťou zranenia obsluhy z dôvodu teplej rozťažnosti náplne.**

### Európska smernica vzťahujúca sa na tlakové zariadenia (PED)

- Všetky zariadenia s vyšším vnútorným pretlakom ako 0,5 bar (g), a väčšieho rozmeru ako 25 mm alebo 1 anglický palec, podliehajú pod Európsku smernicu vzťahujúcu sa na tlakové nádoby (PED).
- Kapitola "Technické údaje" návodu na obsluhu obsahuje príkazy vzťahujúce sa na smernicu PED.
- Produkty uvedené v návode na obsluhu vyhovujú smernici 2014/34/EU EÚ.
- Všetky prietokomery Brooks patria do 1. skupiny kvapalín.
- Produkty presahujúce rozmery 25 mm alebo 1 " spĺňajú I., II., alebo III. kategóriu PED.
- Produkty menšie alebo rovné ako 25 mm alebo 1 " zodpovedajú zaužívanej praxi (SEP).

### Európska smernica vzťahujúca sa na elektromagnetickú kompatibilitu (EMC)

Elektrické / elektronické zariadenia Brooks Instrument, ktoré si zaslúžili značku CE, úspešne splnili skúšobné testy požiadaviek elektromagnetickej kompatibility (smernica EMC č. 2014/30/EU).

Pritom treba venovať zvláštnu starostlivosť na výber signálnych káblov zariadenia, s označením CE.

#### Kvalita signálnych káblov, káblových spojov a prípojov:

Brooks Instrument ponúka vysoko kvalitné káble, ktoré spĺňajú požiadavky kvalitatívneho zaradenia CE.

Ak použijete vlastné signálne káble, majú mať 100%-né tienenie, s plným filtrovaním.

Prípojky "kruhové" alebo tvaru "D" majú mať kovové tienenie. V prípade potreby treba použiť kovové káblové spojky k upevneniu káblového filtra.

Káblový filter treba pripojiť ku kovovému telesu alebo k puzdru, na oboch stranách zabezpečiť tienenie v kruhu 360°. Tienenie má byť ukončené uzemnením.

Prípojky vedúce ku kartám podľa noriem sú nekovové. Použitie káble, pre vyhovenie predpisom CE musia mať 100%-né filtrovanie tienením.

Tienenie má byť ukončené uzemnením.

Konfigurácia kontaktov: Viď priložený návod na obsluhu. .

### Elektrostatický výboj (ESD)

**▲ UPOZORNENIE: Prístroj obsahuje súčiastky, ktoré môžu byť poškodené od elektrostatických nábojov. Pri montáži, odstraňovaní alebo inej údržby vnútorných obvodových kariet je potrebné dodržiavať príslušné postupy.**

#### Postup ošetrovania:

1. Zariadenie odpojiť od napájania.
2. Osoba vykonávajúca údržbu má byť uzemnená uzemňujúcim náramkom, alebo iným, na túto prácu vyhovujúcim spôsobom pred vykonávaním inštalácie, demontáže a nastavenia obvodových kariet alebo iného vnútorného prostriedku.
3. Karty obvodov sa musia prepravovať v elektricky vodivom balení. Karty sa môžu vyberať z ochranného obalu výlučne len tesne pred montážou, zasunutím! Vybranú kartu okamžite treba umiestniť do ochranného obalu, určeného pre dopravu, skladovanie, alebo pre spätnú prepravu do výrobného závodu.

#### Poznámky:

Existencia prvkov, ktoré sú citlivé na elektrostatické výboje (ESD) v prístroji je častým javom. U väčšiny moderných elektronických prostriedkov sú použité prvky s technológiou oxidu kovov (NMOS, SMOS, atď.). Skúsenosti dokazujú, že aj nepatrné elektrostatické výboje poškodzujú, zničia tieto prostriedky. Poškodené súčiastky, aj keď zdanlivo pracujú bez chyby, odkazujú na vznikajúce poruchy.

## Slovene

# Osnovna navodila

## Preberite jih pred nadaljevanjem.

Brooks Instrument oblikuje, proizvaja in preskuša svoje izdelke tako, da ustrezajo številnim nacionalnim in mednarodnim standardom. Te izdelke je treba ustrezno namestiti, jih uporabljati in vzdrževati, saj bodo le tako še naprej delovali v skladu s svojimi običajnimi tehničnimi podatki. Upoštevajte spodnja navodila in jih vključite v svoj varnostni program pri namestitvi, uporabi in vzdrževanju izdelkov družbe Brooks Instrument.

- Če želite zagotoviti ustrezno delovanje, zagotovite, da bo izdelek namestilo, uporabljalo, posodabljalo, programiralo in vzdrževalo usposobljeno osebje.
- Pred namestitvijo, uporabo in servisiranjem izdelka preberite vsa navodila. Če ta priročnik ni ustrezen priročnik, na hrbtni strani poiščite podatke za stik z lokalnim prodajnim mestom. Ta priročnik shranite za poznejšo uporabo.

**▲ OPOZORBA: To napravo lahko uporabljate samo v okviru tehničnih podatkov, ki so navedeni v priročniku z navodili za uporabo. Če tega opozorila ne upoštevate, lahko pride do hudih telesnih poškodb in/ali poškodb opreme.**

- Če katerih koli navodil ne razumete, se za pojasnilo obrnite na svojega zastopnika družbe Brooks Instrument.
- Upoštevajte vsa opozorila, svarila in navodila, ki so navedena na izdelku ali so mu priložena.

**▲ OPOZORILO: Pred namestitvijo se prepričajte, da ima ta naprava zahtevane ocene odobritve, ki izpolnjujejo lokalne in nacionalne zakone. Če tega opozorila ne upoštevate, lahko pride do hudih telesnih poškodb in/ali poškodb opreme.**

- Opremo namestite v skladu z navodili za namestitev, ki so navedena v ustreznem uporabniškem priročniku, ter v skladu z veljavnimi lokalnimi in nacionalnimi zakoni. Vse izdelke priključite na ustrezne električne vire in vire tlaka.
- Postopek: (1) V sistemu počasi zaženite pretok. Počasi odprite procesne ventile, da preprečite nihanja pretoka. (2) Preverite, ali prihaja do puščanj okrog vhodnih in izhodnih priključkov merilnika pretoka. Če ne prihaja do puščanj, vzpostavite delovni tlak v sistemu.
- Pred servisom morate odstraniti tlak v obdelovalni liniji. Če potrebujete rezervne dele, zagotovite, da usposobljeno osebje uporablja rezervne dele, ki jih je odobrila družba Brooks Instrument. Neodobreni deli in postopki lahko vplivajo na učinkovitost delovanja izdelka ali ogrozijo varno upravljanje postopka. Rezervni deli, ki so podobni samo na videz, lahko povzročijo požar, nevarnost električnega udara ali nepravilno delovanje.
- Prepričajte se, da so vrata vrata naprave zaprta in da so zaščitni pokrovi nameščeni, da preprečite električni udar in telesne poškodbe, razen kadar usposobljeno osebje izvaja vzdrževalna dela.

**▲ OPOZORBA: Če je pri napravah za pretok tekočine vhodne in izhodne ventile ob napravi treba iz kakršnega koli razloga zapreti, je treba naprave popolnoma izprazniti. Če tega ne naredite, lahko pride do toplotnega raztezanja tekočine, zaradi katerega se lahko naprava prelomi in povzroči telesne poškodbe.**

## Evropska direktiva o tlačni opremi (PED)

Vsa tlačna oprema z notranjim tlakom, ki je večji od 0,5 bara (g), in velikostjo, ki je večja od od 25 mm ali 1 palca, spada v direktivo o tlačni opremi (PED).

- V poglavju »Tehnični podatki« v tem priročniku najdete navodila, ki se nanašajo na direktivo PED.
- Izdelki, opisani v tem priročniku, so skladni z direktivo EN 2014/34/EU.
- Vsi merilniki pretoka družbe Brooks Instrument spadajo v skupino tekočin 1.
- Izdelki, večji od 25 mm ali 1 palca, so skladni s kategorijo I, II, ali III direktive PED.
- Izdelki, katerih velikost je 25 mm ali 1 palec ali manjši izdelki, so skladni z dobro inženirsko prakso (SEP).

## Evropska direktiva o elektromagnetni združljivosti (EMC)

Naprave družbe Brooks Instrument (električne/elektronske) z oznako CE so bile uspešno preskušene v skladu s predpisi direktive o elektromagnetni združljivosti (Direktiva o elektromagnetni združljivosti 2014/30/EU).

Posebno pozornost morate nameniti izbiri signalnega kabla, ki jih uporabljate za naprave z oznako CE.

### **Kakovost signalnih kablov, kabljskih tesnil in priključkov:**

Brooks Instrument ponuja kable visoke kakovosti, ki ustrezajo tehničnim podatkom za pridobitev oznake CE.

Če uporabljate svoj signalni kabel, morate uporabiti kabel, ki je na splošno popolnoma oklopljen s 100 % zaščito.

Priključki tipa »D« ali »krožni« priključki morajo biti zaščiteni s kovinskim ščitom. Po potrebi je treba uporabiti kovinske kabljske tesnilke, ki zagotavljajo vpenjala za zaslon kabla.

Zaslon kabla je treba priključiti na kovinsko ohišje ali tesnilko in ga na obeh koncih popolnoma zaščititi.

Zaščito je treba prekiniti pri ozemljitvi.

Robni priključki običajno niso kovinski. Kable je treba zaščititi s 100 % zaščito, da ustrezajo oznaki CE.

Zaščito je treba prekiniti pri ozemljitvi.

Navodila z konfiguracijo nožic najdete v priloženem uporabniškem priročniku.

## Elektrostaticna razelektritev (ESD)

**▲ OPOZORILO: Naprava vsebuje elektronske komponente, ki so občutljive na poškodbe zaradi statične elektrike. Pri odstranitvi, namestitvi ali drugih postopkih uporabe notranjega tiskanega vezja ali naprav morate upoštevati ustrezne postopke.**

### **Postopek ravnanja:**

1. Izklopite napravo.
2. Osebje je treba pred namestitvijo, odstranitvijo ali prilagajanjem katere koli kartice tiskanega vezja ali druge notranje naprave ozemljiti z zapestnim pasčkom ali drugimi varnostnimi in primernimi sredstvi.
3. Kartice s tiskanim vezjem je treba prevažati v prevodnem vsebniku. Plošče lahko iz zaščitne embalaže odstranite šele tik pred namestitvijo. Odstranjene plošče je treba takoj shraniti v zaščitno embalažo za prevoz, shranjevanje ali vračilo v tovarno.

### **Opombe:**

Ta naprava ni edinstvena z vidika komponent, ki so občutljive na elektrostaticno razelektritev. Večina sodobnih elektronskih naprav vsebuje komponente, ki uporabljajo oksidno tehnologijo (NMOS, SMOS itd.). Izkušnje dokazujejo, da lahko celo majhne količine statične elektrike poškodujejo ali uničijo te naprave. Poškodovane komponente se predčasno okvarijo, čeprav navidez delujejo pravilno.



## Brooks® VDM300 Vapor Delivery Module

## Spanish

### Instrucciones básicas ¡Léalos primero!

El Brooks Instrument proyecta, fabrica y prueba sus productos de manera que éstos respondan a numerosas normas nacionales e internacionales. Dichas instalaciones deben ser emplazadas, operadas y mantenidas adecuadamente, para que puedan marchar de todas formas en conformidad con el alcance normal de funcionamiento. Las siguientes instrucciones deben cumplirse e incorporadas en su programa de seguridad cuando instalando, operando y mantenimiento los productos Brooks Instrument.

- Para asegurar el adecuado rendimiento, para instalar, operar, actualizar, programar y mantener tiene que realizarse exclusivamente por una persona calificada.
- Antes de la instalación, operación y servicio del producto leer todas las respectivas instrucciones. Si el presente manual no es la adecuada publicación, busque al distribuidor local que figura en la contraportada y póngase en contacto con él para obtener informaciones. Guarde el presente manual para tener informaciones también en el futuro.

**⚠ ATENCIÓN: No haga funcionar los equipos fuera del rango indicado en las instrucciones de funcionamiento. El incumplimiento de estas últimas puede conducir a graves daños personales o a la avería del equipo.**

- Si las instrucciones del manual no son evidentes, póngase en contacto con el representante de Brooks Instrument para aclarar el problema
- Observar todas las alertas, advertencias e instrucciones indicadas en el equipo o suministradas con el mismo.

**⚠ ADVERTENCIA: Antes de la instalación, asegúrese de que el instrumento ofrece las características de aprobación necesarias para satisfacer los requisitos normativos locales y nacionales. En caso contrario, se pueden producir lesiones personales y/o daños en el equipo.**

- Instale su equipo en conformidad con las recomendaciones indicadas en las respectivas instrucciones de instalación y con las pautas de las normas vigentes locales e internacionales. Conectar el producto exclusivamente a la adecuada fuente eléctrica y presión.
- Proceso: (1) Colocar lentamente flujo en el sistema. Abrir lentamente las válvulas de proceso para evitar oscilación del flujo. (2) Verificar si hay fuga alrededor de las conexiones de entrada y salida del flujómetro. Si no hay, llenar el sistema con la presión de operación.
- Antes de efectuar el servicio, verificar si hay presión o no en la tubería de la red. Si se requiere realizar un recambio de piezas, solamente el personal calificado puede manipular las piezas de repuesto determinadas por Brooks Instrument. Las piezas y operaciones no autorizadas pueden afectar el rendimiento del producto o arriesgar el funcionamiento seguro. El recambio realizado con piezas sólo similares pueden traer como consecuencias incendios, choques eléctricos o funcionamiento bajo.
- Todas las puertas de la instalación deben estar cerradas, las cubiertas de protección tienen que hallarse en el debido sitio con el fin de evitar los daños personales y los choques eléctricos, salvo cuando un especialista efectúa el mantenimiento.

**⚠ ADVERTENCIA: En caso de instalaciones que circulen líquido, si por cualquier razón se hubiera de cerrar las válvulas de entrada y salida situadas al lado del equipo, dichas instalaciones deberán ser completamente vaciadas. La omisión de esto último puede provocar la dilatación térmica del líquido, lo que puede dañar al equipo y conducir a daños personales.**

### Directriz Europea de los Equipos de Presión (PED)

Todos los equipos de presión, con una presión interna que supere a 0,5 bar (g) con tamaño mayor a 25 mm o 1 pulgada entran el ámbito de la Directriz Europea de los Equipos de Presión (PED).

- El capítulo Datos Técnicos del manual incluye las instrucciones respecto a las directivas de PED
- Los instrumentos de medición indicados en el Manual responden a las EN directivas 2014/34/EU.
- Todos los caudalímetros Brooks pertenecen a la categoría 1 del grupo de fluidos.
- Los instrumentos de medición más grandes que 25 mm o 1 pulgada están en conformidad con las categorías I, II o III de PED
- Los instrumentos de medición más pequeños que 25 mm o 1 pulgada siguen la Práctica Aceptada de Ingeniería (SEP).

### Directriz Europea respecto a la Compatibilidad Electromagnética (EMC)

Las instalaciones de Brooks Instrument (eléctricas/electrónicas) merecedores de la categoría CE cumplieron con éxito las pruebas que verifican las exigencias de la compatibilidad electromagnética (directiva de EMC 2014/30/EU).

Al mismo tiempo se ha de prestar una especial atención en la selección de los cables de señal, utilizados con los equipos marcados con CE.

**Calidad de los cables de señal, piezas de unión de cable y conectores:**

El Brooks Instrument ofrece cables de alta calidad, que responden a los requerimientos de calificación CE.

Si se utiliza cable propio de la firma, se ha de elegir uno que sea completamente filtrado con blindaje de 100%.

Las piezas de unión de forma „D” o „circular” deben ser blindadas mediante blindaje metálica. Si es necesario, aplicar piezas de unión de metal para sujetar el filtro de cable.

Conectar el filtro de cable a la caja o manguito de metal blindándolo en ambas caras en 360°.

El blindaje debe terminarse en tierra.

Los conectores que pertenecen a las tarjetas normalmente no son metalizados. Los cables utilizados deben ser filtrados con una blindaje de 100% para responder a la calificación CE.

El blindaje debe terminarse en tierra.

Configuración de contacto: Véase Instrucciones de operación adjuntas.

### Descarga Electroestática (ESD)

**⚠ PRECAUCIÓN: El aparato incluye piezas electrónicas que son susceptibles a los daños provocados por la electricidad estática. Observar los adecuados procesos para remover, instalar o manipular las tareas y medios de circuitos eléctricos internos**

**Proceso de operación:**

1. Desconectar la fuente eléctrica de la unidad.
2. La persona debe ponerse a tierra mediante una palanca acodada o por otro medio seguro y apropiado para dicho fin antes de instalar, sacar o ajustar el circuito impreso eléctrico u otro medio interno.
3. El circuito impreso debe ser transportado en embalaje conductor. Las tarjetas no pueden sacarse de la cubierta protectora exclusivamente directamente antes de la instalación. Las tarjetas desmontadas deben colocarse sin tardar en el embalaje protector utilizado para manipulación, almacenamiento o devolución a la fábrica.

**Notas:**

Este equipo no es el único contenido de piezas susceptibles a la descarga electroestática (ESD). En la mayoría de los medios electrónicos modernos se encuentran piezas fabricadas por tecnología de óxido metálico. (NMOS, SMOS etc.). Las experiencias confirman que incluso una mínima electricidad estática puede dañar o destruir dichos medios. Las piezas averiadas, aunque funcionen aparentemente bien, indican una falla inicial.

Swedish

**Väsentliga anvisningar.  
Läs detta innan du fortsätter!**

Brooks Instrument konstruerar, tillverkar och testar sina produkter med syfte att uppfylla alla nationella och internationella standarder. Dessa produkter måste installeras på rätt sätt, handhas och underhållas för att de skall fungera kontinuerligt enligt deras normala specifikation. De följande anvisningarna bör följas och integreras till Ert säkerhetsprogram varje gång när Brooks Instruments produkter installeras, handhas och underhålls.

- För att garantera angiven funktion, använd kvalificerad personal till att installera, handha, uppgradera, programmera och serva produkten.
- Läs alla instruktioner innan produkten installeras, startas upp och underhålls. Om du finner att denna instruktionshandbok inte är den rätta instruktionsboken, titta på i slutet av pärmen för information om hur man kan kontakta lokala representanter. Spara denna instruktions manual för senare behov.

**▲ VARNING: Kör inte detta instrument utanför dess specifikationer som är angiven i Instruktionsboken. Undvikande att ta denna varning kan leda till allvarliga personliga skador och / eller skada utrustningen.**

- Om du inte förstår någon av dessa instruktioner, kontakta din representant för Brooks Instrument för klarläggande.
- Följ alla varningar och instruktioner som följer med leveransen av denna produkt.

**▲ VARNING: Säkerställ före installation att detta instrument har alla nödvändiga godkännanden för att uppfylla lokala och nationella regler. Underlåtenhet att följa denna varning kan leda till personskador och/eller skador på utrustningen.**

- Installera din utrustning på sättet som anges i den gällande handbokens installationsanvisningar och enligt tillämpliga lokala och nationella föreskrifter. Koppla varje produkt till föreskriven ström- och tryckkällan.
- Igångsättning: (1) Koppla långsamt på flöde i systemet. Öppna processventiler sakta för att undvika för höga flöden. (2) Kontrollera läckor vid mätarens anslutningar för in- och utlopp. Om inget läckage förekommer, kör systemet upp till drifttrycket.
- Kontrollera att processledningens tryck är bortkopplat före service. I fall det behöves kompletteras med nya delar, se till att komponenter föreskrivna av Brooks Instrument används. Samt att kvalificerad personal utför arbetet. Ej rekommenderade komponenter och åtgärder kan påverka produktens prestanda och sätta din driftsäkerhet på spel. "Felaktiga" ersättningar kan orsaka eld, elektriska skador samt felaktig funktion.
- Se till att anordningens kåpor och skyddslock ligger på sin plats med syfte att förebygga elektriska kontakt och personliga skador; det enda undantag gäller när underhållsarbete utförs av kvalificerad personal.

**▲ VARNING: I fall av - flödesmätare / regulatorer för vätskor: Ifall ventiler före och efter skall stängas av, måste alla ledningar tömmas på all vätska. Att ej tömma ledningar alt koppla bort trycket kan göra så att vätskans värmeutvidgning kan spräcka / skada utrustningen och orsaka personliga skador.**

**European Pressure Equipment Directive (PED) - (Rådets Direktiv 99/36/EG av den 29 april 1999[1] om transportabla tryckbärande anordningar)**

Alla utrustning för tryck med ett tryck över 0.5 Bar(g) bar och större demensioner än 25 mm eller 1" (inch) faller under Tryck direktiv 99/36/EG av den 29 april 1999[1] om transportabla tryckbärande anordningar - PED.

- Den här Instruktionsbokens Sektion " Specifikation" innehåller anvisningar gällande PED Direktivet.
- Mätare som beskrivs i denna Instruktionsbok är i överensstämmelse med EN Direktivet 2014/34/EU.
- Brooks Instruments alla flödesmätare faller under flödesgrupp nr. I.
- Mätare som är större än 25 mm eller 1" (inch) överensstämmer med PED kategorier I, II eller III.
- Mätare på 25mm eller 1" (inch) eller mindre faller under Sound Engineering Practice (SEP) (God Teknisk Praxis).

**European Electromagnetic Compatibility (EMC) - Elektromagnetisk kompatibilitet**

Brooks Instrument (elektriska/elektroniska) CE-märkta anordningar har redan genomgått ett framgångsrikt prov enligt regleringar under Electromagnetic Compatibility (EMC directive 2014/30/EU). Man måste dock ägna särskild uppmärksamhet till valet av signalkabeln som skall används för CE-märkta anordningar.

**Signalkablar, packboxars och kontaktdons kvalitet:**

Brooks Instrument levererar högkvalitativa kablar som överensstämmer med specifikation för CE-intygade produkter.

Om man använder sin egen signalkabel, då bör man använda en kabel som är fullständigt skärmad med en 100% avskärmning.

"D" eller "Cirkelformiga" kontaktdon skall vara skärmade med metalliska avskärmningar. Om det är användbart, bör metallpackboxar som ger en bra fastspänning för kabelskärmar användas.

Kabelavskärmningen måste kopplas till den metalliska skärmade anordningen eller packboxen och skärmas vid båda ändar runt omkring.

Avskärmningens avspänning måste jordas.

Card Edge Kontaktdon är icke metalliska. För att överensstämma med krav på CE-intyg, skall de kablarna som används vara skärmade med 100% skärmning.

Skärmningen måste jordas.

Vad gäller stiftkonfigurationen: Se den bifogade Instruktionshandboken.

**ESD (Elektrostatiska urladdningar)**

**▲ OBS: Denna utrustning innehåller elektroniska komponenter som är lättpåverkade av skada orsakad av statisk elektricitet. Lämplig hanteringsprocedur måste följas när man tar bort, installerar eller på något annat sätt hanterar inre kretskort eller andra anordningar.**

1. Ström till enheten måste kopplas från.
2. Personalen måste jordas med hjälp av ett armband eller något annat säkert medel innan något kretskort eller andra inre anordningar installeras, tas bort eller justeras.
3. Kretskort måste transporteras i en speciell förpackning för elektronik. Kort skall ej tas bort från deras skyddskåpa innan man skall installera dem. De borttagna korten bör omedelbart läggas i speciell förpackning för transport, lagring eller återlämnande till fabriken.

**Anmärkning:**

Dessa instrument är ej unika vad gäller dess ESD (Elektrostatiska urladdningar) - känsliga komponenter. De flesta samtida konstruktioner innehåller komponenter som utnyttjar metalloxid teknologi (NMOS, SMOS, o.s.v.). Erfarenhet har visat att även små mängder av statisk elektricitet kan skada eller förstöra dess komponenter. Skadade komponenter - även om de annars verkar fungera ordentligt - har ofta en kortare livslängd.

# Brooks® VDM300 Vapor Delivery Module

---

## LIMITED WARRANTY

Visit [www.BrooksInstrument.com](http://www.BrooksInstrument.com) for the terms and conditions of our limited warranty.

## BROOKS SERVICE AND SUPPORT

Brooks is committed to assuring all of our customers receive the ideal flow solution for their application, along with outstanding service and support to back it up. We operate first class repair facilities located around the world to provide rapid response and support. Each location utilizes primary standard calibration equipment to ensure accuracy and reliability for repairs and recalibration and is certified by our local Weights and Measures Authorities and traceable to the relevant International Standards.

*Visit [www.BrooksInstrument.com](http://www.BrooksInstrument.com) to locate the service location nearest to you.*

## START-UP SERVICE AND IN-SITU CALIBRATION

Brooks Instrument can provide start-up service prior to operation when required.

For some process applications, where ISO-9001 Quality Certification is important, it is mandatory to verify and/or (re)calibrate the products periodically. In many cases this service can be provided under in-situ conditions, and the results will be traceable to the relevant international quality standards.

## SEMINARS AND TRAINING

Brooks Instrument can provide seminars and dedicated training to engineers, end users and maintenance persons.

*Please contact your nearest sales representative for more details.*

## TRADEMARKS

Brooks, Quantim, are trademarks of Brooks Instrument, LLC.  
All other marks are the property of their respective owners. ....



## Global Headquarters

### Brooks Instrument

407 West Vine Street

Hatfield, PA

19440-0903 USA

Toll-Free (USA): 888-554-FLOW

T: 215-362-3500

F: 215-362-3745

[BrooksAM@BrooksInstrument.com](mailto:BrooksAM@BrooksInstrument.com)

A list of all Brooks Instrument locations and contact details can be found at [www.BrooksInstrument.com](http://www.BrooksInstrument.com)

---