

AUTO PRESSURE REGULATOR
R600-BM222-B

CODE: CSMSR60004 Ver.1.0
1. PRODUCT SPECIFICATIONS

SERIES	R600
MODEL	BM222-B
Pressure control range	10~300kPa (A) *1
Pressure control type	Back pressure control
Valve type	Normally closed under no electricity: C
CV value(F.S. Flow rate *2)	0.016(5SLM) *3
Accuracy	±0.5% F.S.
Maximum primary pressure	400kPa (A) *1
Pressure resistance	1MPa (A) *1
Operating temperature	5~50°C (recommended temperature range15~45°C)
Temperature coefficient	±0.03% F.S./ °C
External leak rate	1×10 ⁻¹¹ Pa·m ³ /s (He)
Pressure rate setting signal	0.1~5VDC (2~100% F.S.)
Pressure rate output signal	0~5VDC (0~100% F.S.)
Digital Interface	RS485 (F-Net protocol)
Power supply	24VDC±4V
Power consumption	6VA
Electromagnetic Compatibility	The EMC Directive 2014/30/EU EN61326-1:2013 ClassA
Wetted materials	SUS316L, PTFE, Magnetic Stainless Steel
Standard fittings	1/4 inch Swagelok or equivalent:127mm 1/4 inch VCR or equivalent:124mm

Notes:

- *1: (A): Absolute Pressure, (G): Gauge Pressure.
- *2: Flow rate is measured at P1=50kPa(G)/P2=atmosphere by using N₂.
- *3: SCCM, SLM : ml/min, l/min at 0°C, 1013hPa(1atm)

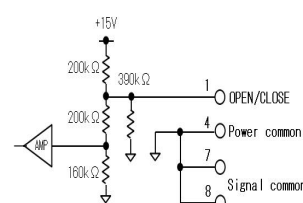
2. ELECTRICAL CONNECTION

*Be sure to use a shielded cable to minimize the effect of electrical noise.
If you provide your own or off-the-shelf cable, be aware that the cable may not be able to connect depending on the shape of the plug and hood.

1) Analog connector: D-subminiature 9 pin Male with #4-40 UNC.

Pin No.	Signal Name
1	Valve override open/close signal *1
2	Analog pressure rate output signal: 0 to 5VDC *2
3	Power supply input (+20V~28VDC) Nominal voltage 24V
4	Power common *4
5	N.C. *5
6	Analog pressure rate setting signal: 0.1 to 5VDC *3
7	Signal common *4
8	Signal common *4
9	N.C. *5

*1: Open/Close Circuit



Notes:

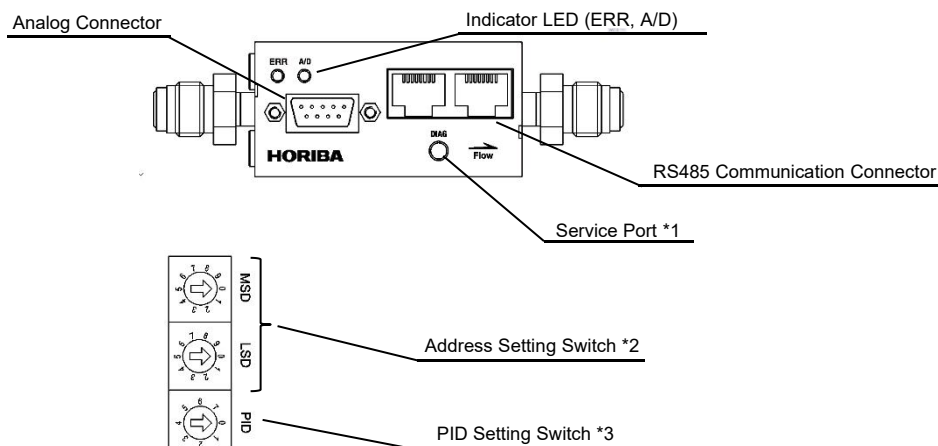
- *1: 13~32V : OPEN, GND~-15VDC input : CLOSE, Input impedance: minimum 100kΩ
- *2: Minimum load resistance: 2kΩ
- *3: Input impedance: minimum 1MΩ.
- *4: Pin No.4, Pin No.7 and Pin No.8 are connected inside the product.
In order to prevent signal noise on the performance of the system, connect the power common and the signal common separately. Furthermore, do not connect the power common and the signal common outside the product.
- *5: N.C.: No connection (Do not connect anything here.)

2) RS485(F-Net protocol) communication connector
Modular jack connector (RJ45 connector)

Pin No.	Signal Name
1	Digital signal common
2	Digital signal common
3	N.C. *1
4	RS485 Serial (-) *2
5	RS485 Serial (+) *2
6	N.C. *1
7	N.C. *1
8	N.C. *1

Notes:

- *1: N.C.: No connection (Do not connect anything here.)
- *2: No termination resistor is installed in the product.
When terminating, connect a resistor of 120 [Ω] ± 1 [%] between RS485 Serial (+) and (-).



Notes:

- *1: Service port: Please do not use.
- *2: LSD is the least significant digit, MSD is the most significant digit.
- *3: PID Setting Switch: R600 series can change the response time in 8 steps by a rotary dip switch.
The dip switch is set at 7 as a default value. If the pressure control can not be stabilized, Change the response time.

3. LED

1) Indicator LED (ERR)

ERR LED	Operating status
Red, solid	Alarm occurrence
Off	Running properly

2) Indicator LED (A/D)

A/D LED	Operating status
Green, solid	Analog mode
Green, flash	Digital mode
Off	Failure

4. HOW TO OPERATE

1) Connection to gas system

Install the product in the line, in accordance with the direction of the FLOW arrow.
As the inlet and outlet fittings of the product, the 1/4 inch Swagelok or 1/4 inch VCR (or equivalent) is standard available. The product can be mounted in any orientation.
Check for leaks on your gas line before use.



2) Connection to electrical system

Make sure that all pin connections of the mating cable have same pin outs as the pin assignment tables before making any connections.
Power supply range : +24VDC±4V 6VA
Nominal voltage : 24V

3) Warm-Up

The product must be warmed up for at least 30 minutes with no gas supplying after power on.
Failure to warm up may cause improper operation such as accuracy deterioration.

5. Digital Interface

Interface Specification

Signal level	RS485
Signal line	Three wire connection, Asynchronous serial transmission
Baud rate	38400bps
Start bit	1bit
Character bit	7bit
Parity	Odd
Stop bit	1bit

ASCII(7bit) code

*Please ask the details of a communications protocol and a command to our company.

6. CAUTION AND REMINDERS

- Please make sure that all piping is properly tightened with no leaks and completely purged.
Insufficient purging may cause troubles such as particulate contamination, clogging, throughput decreasing, etc.
- To eliminate particulates and impurities, install gas filters upstream the product.
- Storage temperature of the product is 0~50°C. Do not store the product under the condition in excess of this range.
No dew condensation is allowed to the product. Dew condensation could cause damage to the product.
- Please do not open the case of the product. Otherwise, it could cause an electric shock.
- Analog pressure rate signal may be output transitionally within the range of the power supply voltage (ex, just after power on).
Be sure to check the input voltage range of your system if using the signal.
- Please do not turn on and off the power repeatedly in a short period.
To prevent unexpected operation, wait at least three (3) seconds to turn on the power again after power off.
Be sure to connect all mating cables before supplying the power to the product.
- Please confirm the pressure condition meets the requirement before zero adjustment.
Furthermore, considering sensor stability, it is recommended to wait for more than thirty (30) minutes before zero adjustment.
- Please make sure that the power supply source is capable of delivering enough power to the product(s).
- Please do not apply excessive force and pressure to the product and the cables.
- To prevent unexpected operation such as overshoot, be sure to open shut-off valves before sending set signals to the product.
- If the control valve is fully open or operating error is occurring, the gas pressure rate may exceed the F.S. value.
- Do not attempt to seek and/or run hidden commands of the product. Otherwise, it may cause internal data change and/or disappearance to have a negative impact on your system.
- Be sure that the process piping is metal and grounded.
- This product is intended for industrial environments. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.
- Since the weight of the product is approximately 1.1kg, handling the product should be careful.
Holding the case part of the product may cause falling and damage to the product, therefore be sure to hold the block part of the product when carrying.

This instruction manual is subject to alteration without notice.

7. PRODUCT WARRANTY

- Period: This product is warranted for two (2) year (parts and labor) from date of shipment.
Repair will be provided free of charge during this period if the product is returned to HORIBA Precision Instruments or authorized service representative with a description of the problem.
HORIBA Precision Instruments is not responsible for damage due to customer neglect or improper operation of this product.
- Scope: Warranty coverage is restricted to this product only. HORIBA Precision Instruments is not responsible for damage to other components due to improper operation of this product.
- Warranty: Replacement parts are warranted for ninety (90) days or the remainder of the warranty period (whichever is longer).
- HORIBA Precision Instruments is not responsible for damage due to:
 - Natural disasters
 - Miss-operation or abuse of this product
 - Operation or storage in an unsuitable environment
 - Operation outside of the rated specifications
 - Unauthorized alterations or retrofits to this product
 Examples for out of scope of responsibility by HORIBA Precision Instruments:
 *In case of use of high reaction gas, clogging due to incomplete purge or leakage, etc. in gas line.
 *Contamination or clogging by dust or mist, etc.
 Repair expense with/without charge is to be determined as examination and/or disassembly of the returned products.

Appendix : China RoHS

标记的意义 Meaning of Marking マークの意味



本标记适用在中华人民共和国销售电器电子产品，标记中央的数字表示环境保护使用期限的年限。(不是表示产品质量保证期间。) 只要遵守这个产品有关的安全和使用注意事项，从制造日开始算起在这个年限内，不会给环境污染、人体和财产带来严重的影响。请不要随意废弃本电器电子产品。

This marking is applied to electric and electronic products sold in the People's Republic of China. The figure at the center of the marking indicates the environmental protection use period in years. (It does not indicate a product guarantee period.) It guarantees that the product will not cause environment pollution nor serious influence on human body and property within the period of the indicated years which is counted from the date of manufacture as far as the safety and usage precautions for the product are observed. Do not throw away this product without any good reason.

本マークは、中華人民共和国で販売される電気電子製品に適用され、マークの中央の数字は環境保護使用期限の年数を意味します(製品の品質保証期間を示すものではありません)。この製品に関する安全や使用上の注意をお守り頂く限り、製造日から起算するこの年限内では、環境汚染や人体や財産に深刻な影響を及ぼすことはありません。本製品をみだりに廃棄しないでください。

产品中有害物质的名称及含量 Name and amount of hazardous substance used in a product

部件名称 Unit name	有害物质 Hazardous substance					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent chromium (Cr (VI))	多溴联苯 Polybromo- biphenyl (PBB)	多溴二苯醚 Polybromo- diphenyl ether (PBDE)
外壳 Case	○	○	○	○	○	○
机械零部件 Machine parts	○	○	○	○	○	○
电路板 Printed board	○	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。
This form is prepared in accordance with SJ / T 11364.
○: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。
Denotes that the amount of the hazardous substance contained in all of the homogeneous materials used in the component is below the limit on the acceptable amount stipulated in the GB/T 26572.
×: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。
Denotes that the amount of the hazardous substance contained in any of the homogeneous materials used in the component is above the limit on the acceptable amount stipulated in the GB/T 26572.

Appendix 2: CE Marking Directive & UKCA Marking Regulations

This document is attached in compliance with revisions in the CE Marking Directive or UKCA Marking Regulations. All HORIBA Precision Instruments products exported to Europe are accompanied by this document. Please note that the document is not valid outside Europe.

[CE Marking]

Manufacturer information

Name: HORIBA Precision Instruments (Beijing) Co.,Ltd.
Address: No.40 BeiyuanRoad chaoyangDistrict.Beijing.china

Authorized agent information

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Importer to UK.

Name: HORIBA UK Limited
Address: Kyoto Close, Moulton Park, Northampton, NN3 6FL, UK

[UKCA Marking]

Manufacturer information

Name: HORIBA Precision Instruments (Beijing) Co.,Ltd.
Address: No.40 BeiyuanRoad chaoyangDistrict.Beijing.china

Authorized agent information

Name: HORIBA UK Limited
Address: Kyoto Close, Moulton Park, Northampton, NN3 6FL, UK

Note

Safety information is provided below.



High-voltage parts. Do not remove model case.
Removing it may cause electric shock or product failure.

Hinweis

Die Sicherheitshinweise sind unten angegeben.



Hochspannungsteile. Das Gehäuse des Modells nicht abnehmen.
Das Abnehmen des Gehäuses kann zu einem Stromschlag oder Produktversagen führen.

Remarque

Les informations de sécurité sont fournies ci-dessous.



Pièces à haute tension. Ne pas retirer le boîtier du modèle.
Le retirer pourrait provoquer une décharge électrique ou une défaillance du produit.

注意

记录以下安全信息。



存在触电和故障的风险，请不要打开外壳。

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