

AUTO PRESSURE REGULATOR
GR-317(F)

CODE: I031273400
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1. SPECIFICATIONS

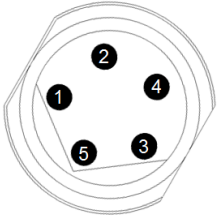
MODEL	GR-317F
Valve Type	Normally Closed under no electricity: C
External leak rate	5×10 ⁻¹² Pa·m ³ /s(He) or less
The maximum operating pressure *1)	250 kPa(A)
Pressure resistance *1)	300 kPa(A)
Operating temperature	5 ~ 50 deg.C (Recommended temperature range 15 ~ 40 deg.C)
Power supply	24 VDC ± 4V
Power consumption	6.6 VA
Digital Interface	EtherCAT *2) protocol
Gas *3)	He, Ar, N2
Standard fittings	1/4 inch VCR or equivalent
Presure full scale *1)	13.33 kPa(A) [100 Torr]
Pressure control range	1 ~ 100 %
Pressure accuracy	± 0.5 %F.S. [Measurement range: 0 ~ 100 %F.S.]
Response	1 sec or less (in an adjustment condition)
Flow full scale *4)	20, 50, 100 SCCM
Flow accuracy *5)	± 1.0 %R.S. (Flow rate >25 %F.S.) ± 0.25 %F.S. (Flow rate ≤25 %F.S.) [Measurement range: 0 ~ 100 %F.S.]
Mounting orientation	Free

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Notes:
*1) (A): Absolute Pressure
*2) EtherCAT is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH in Germany.
*3) Please consult about other specifications.
*4) SCCM denote gas flow rate in ml/min, respectively.
*5) Flow accuracy is guaranteed only for calibration gas and flow rate of full scale.
Temperature range in which "accuracy" is guaranteed is in accordance with SEMI: E56-0309.

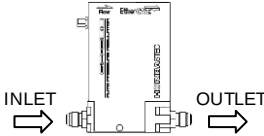
2. POWER CONNECTION

- M8 5pin Male connector
1. V+
 2. N.C.
 3. Power Common
 4. N.C.
 5. N.C.
- N.C. : Non Connection.
Don't connect anything to N.C.



3. HOW TO OPERATE

- 1) Connection to Gas System
The product case is labeled with a flow direction arrow. Please make sure that the product is mounted in the corrected direction with respect to flow.
Gas inlet and outlet of the product fittings are 1/4 inch VCR or equivalent with male screw fitting as standard.
The product can be mounted in any orientation, in most applications, without degradation of performance.
Please make sure that process connections are as leak tight as possible.
Confirm leak integrity of the installed product at the gas system connections using a helium mass spectrometer leak detector with sufficient sensitivity.



- 2) Connection to Electrical System
Electrical connection is in accordance with the electrical pin assignments table.
Failure to make a proper connection of the cable will cause damage to the product.
Power requirements for direct current: DC 20 ~ 28 V, (330 mA at 20 V)
Rated voltage: 24 V
- During consecutive operating, use the rated voltage.
Use cable(connector) applicable for EtherCAT Technology Group Specification: ETG5003.2020.
Other power supply unit or cables may cause troubles or damage to the product.

- 3) Warming Up Operation
The power is to be supplied more than 30 minutes without gas flowing, as warming-up operation. Without warming-up operation, the product may cause malfunction such as the aggravation of the pressure and flow rate accuracy.

- 4) Response time change over
- The product can change over 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 is not stabilized, change over the response time.

Rotary dip SW	SW position	Response Time
	0	Slowest
	7	Fastest (default)

- 5) Control mode change over
- The product can change over Full open [upper], Control [middle] and Full close [lower] by switch of outlet side. Full open and Full close by switch have priority over control by EtherCAT communication.

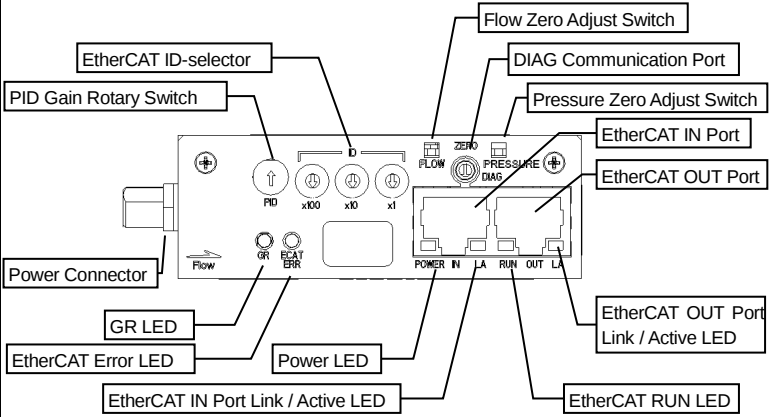


4. DIGITAL INTERFACE

- 1) Communication Specification
- EtherCAT Protocol
 - This product is the complex slave device of EtherCAT. EtherCAT Slave Information (ESI) file shows about EtherCAT parameter details. It's stored in Slave Information Interface (SII) on the device. If you need ESI file, please contact us or our sales agency.
- 2) Proper Specification
- ETG.1000 : EtherCAT Specification
 - Part 2 : Physical Layer service definition and protocol specification V1.0.4
 - Part 3 : Data Link Layer service definition V1.0.4
 - Part 4 : Data Link Layer protocol specification V1.0.4
 - Part 5 : Application Layer service definition V1.0.4
 - Part 6 : Application Layer protocol specification V1.0.4
 - ETG.1004 : Unit specification V1.0.0
 - ETG.1020 : Protocol Enhancements V1.3.0
 - ETG.1300 : Indicator and Labeling Specification V1.1.1
 - ETG.2000 : EtherCAT Slave Information V1.0.11
 - ETG.5003 : EtherCAT Semiconductor Device Profile
 - Part 1 : Common Device Profile V1.1.0
 - Part 2 : Semiconductor Device Profile Part2 Firmware Update V1.0.0
 - Part 202x : Specific Device Profile: Mass Flow Controller V1.2.0
 - sub-profile 2025: GPC (General Pressure Controller)
- 3) Other
- Supported Indicators :LED Indicators
 - Default ID-selector :0x000
 - Default SII Configured Station Alias :0x0000

5. SWITCH

Pressure Zero Adjust Switch: Pressure zero point adjustment function by hardware switch.
Flow Zero Adjust Switch: Flow zero point adjustment function by hardware switch.
DIAG Communication Port: This is the service port, you can't use.
GR LED: The LED showing the product status.



6. CAUTION AND REMINDERS

- 1) Please make sure that process piping system is as leak tight as possible. It is important to purge the entire gas line. If the purge is not sufficient, it might invite troubles such as particle generation, clogging, decrease in throughput, etc.
- 2) Please install gas filter on inlet side of the product for eliminating particles and impurities which flow from upstream of gas line.
- 3) Please make sure that the process piping system is made of metal and grounded electrically for electromagnetic compatibility performance.
- 4) Preservation temperature of the product is 0 to 80 deg.C. Please avoid the temperature out of range for preservation. Please do not dewing it, or make it to failure.
- 5) Never remove the product case, since there is a high voltage portion built inside the product. Removing the product case might invite to receive an electric shock, or to result in failure of the product.
- 6) Please do not turn on and off the power repeatedly in a short period. More than 3 seconds should be kept before turning on the power again. Power source should be turned on / off simultaneously. Partial power supply or signal input may cause trouble.
- 7) When utilizing Flow Zero-Adjust function, do not pressurize inside the product. If pressurized gas is inside product, the function does not work correctly. After gas flow is suspended, waiting more than 1 minute is recommended to make the flow sensor output steadier. It needs 30 minutes for the product becoming steady after power is turned on.
- 8) When utilizing Pressure Zero-Adjust function, reduce the pressure of inside the product (recommend 13.3 Pa or less). If pressurized gas is inside product, the function does not work correctly. After reduce the pressure, waiting more than 1 minute is recommended to make the pressure sensor output steadier. It needs 30 minutes for the product becoming steady after power is turned on.
- 9) Please make sure of sufficient capacity of power supply source.
- 10) Please do not apply any excessive force and pressure on the main body of the product and the cable.
- 11) The flow rate of product at shipment is calibrated at 25 deg.C under 1013hPa (1atm.) or 0 deg.C under 1013hPa (1atm.).
The following notations are used for gas flow rate units for convenience;
CCM, LM : ml/min, l/min at 25 deg.C under 1013hPa (1atm.)
SCCM, SLM : ml/min, l/min at 0 deg.C under 1013hPa (1atm.)
- 12) About GR-317F, please consult HORIBA STEC first prior to using this model with a gas other than the nameplate or calibration gas.
- 13) Please keep in mind that the control valve used in the product cannot shut-off the gas. Where positive shut-off is required, a separate isolation valve should be installed for this purpose.
- 14) When you use the pneumatic valve in front or behind the product to shut off the gas,because it is thought that show the abnormal movement such as overshots depending on a timing of the opening and shutting of the pneumatic valve, please open the pneumatic valve before inputting the setting signal of the product.
- 15) When the control valve in the product is fully open or when it's out of control, the flow rate of gas and pressure exceeds the indicated F.S. value.
- 16) If nonvolatile memory is rewritten 100,000 times or more, a defect of operation may arise.
- 17) DIAG communication port is the communication port for service. Please don't use, because it may cause the error or problem.
- 18) This is a product 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.

* Please require us or our sales agency to send technical document, if necessary.
* This instruction manual is subject to alteration without notice

The technical guide of the product which conforms to EtherCAT is provided at home page of EtherCAT Technology Group.
URL <http://www.ethercat.org/>

7. PRODUCT WARRANTY

- 1) Period:
This product is warranted for one (1) 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 STEC or authorized service representative with a description of the problem. HORIBA STEC is not responsible for damage due to customer neglect or improper operation of this product.
- 2) Scope:
Warranty coverage is restricted to this product only. HORIBA STEC is not responsible for damage to other components due to improper operation of this product.
- 3) Warranty:
Replacement parts are warranted for ninety (90) days or the remainder of the warranty period (whichever is longer).
- 4) HORIBA STEC is not responsible for damage due to:
- a) Natural disasters
 - b) Miss-operation or abuse of this product
 - c) Operation or storage in an unsuitable environment
 - d) Operation outside of the rated specifications
 - e) Unauthorized alterations or retrofits to this product

Examples for out of scope of responsibility by HORIBA STEC;
*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.

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)
印刷电路板 Printed board	×	○	○	○	○	○
箱 Case	○	○	○	○	○	○
机械零部件 Machine parts	×	○	○	○	○	○

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.

标记的意义 Meaning of Marking
 本标记适用在中华人民共和国售电器电子产品，标记中央的数字表示环境保护使用期限的年数。(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。

•For questions or service please contact:

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