

Agilent AGC-100 Vacuum Gauge Controller

User Manual



Notices

Manual Part Number

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Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

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1 Instructions for Use

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About this manual

Validity

This manual lists the instructions for the users of the AGC-100, with particular reference to the notions relating to safety, operation and first level maintenance, limited to maintenance operations for which the user is responsible.

The maintenance operations, illustrated in the specific sections, with specific provisions relating to the higher level of maintenance (personnel specifically trained for maintenance operations) must not be carried out by the user.

For a correct installation and start/stop, please refer to "Installation" chapter.

For more detailed technical use, please refer to "Operations" chapter.

NOTE

- 1** This manual contains useful information so that all personnel using the AGC-100 can operate it safely and guarantee perfect efficiency, for its entire life span.
 - 2** Keep this manual, together with all the related publications, in an accessible place known to all operators/maintenance personnel.
-

Definitions and terminology

Definition of Caution, Warning and Note

Some important references of this manual are highlighted and framed in contrasting color.

CAUTION

Caution messages are displayed before procedures which, if not observed, could cause damage to the equipment.

WARNING

Warning messages draw the operator's attention to a specific procedure or practice which, if not performed correctly, could result in serious personal injury.

NOTE










Notes are intended to call attention to important information and provide more detail regarding specific steps.

Warning Symbols

The following is a list of symbols that appear in conjunction with warnings on the AGC-100. The hazard they describe is also shown. A triangular symbol indicates a warning. The meanings of the symbols that may appear alongside warnings in the documentation are as follows.

The following symbol may be used on warning labels attached to the instrument. When you see this symbol, refer to the relevant operation or service manual for the correct procedure referred to by that warning label.



| | |
|---|---|
|  | Generic hazard |
|  | CE certification |
|  | Waste Electrical and Electronic Equipment |
|  | The lamp / display is lit |
|  | The lamp / display flashes |
|  | The lamp / display is off |
|  | Press the key (example: parameter key) |
|  | Do not press any key |
|  | Labeling |

Safety

This section contains the information, prescribed by the Low Voltage Directive 2014/35/EU, which is essential for the compliance and observance of the safety regulations both generally and in relation to the specific use of the product.

Failure to comply with these instructions and the other instructions contained in this manual may render the safety conditions envisaged in the design phase inefficient and cause accidents to those operating the product.

Agilent Technologies declines all responsibility for damage to the product or for the physical safety of the operator or third parties deriving from the non-observance of the safety rules indicated in the technical documentation.

Proper use

This manual contains important warnings and safety instructions to be observed in order for the unit to work safely.

The product described in this manual is intended exclusively for the area of application specified in the instructions. The manual also provides indications regarding the essential requirements for the application and operation of the product as well as the safety measures that can be adopted to guarantee regular operation. Agilent Technologies does not provide any guarantee or assume any responsibility for applications other than those described in this manual or in which the essential requirements and safety measures are not respected.

The product must only be used by qualified personnel who are able to take the necessary safety measures under conditions that do not cause damage or injury. Any accessories and equipment used with the product must be supplied or approved by Agilent Technologies. Any adjustment or maintenance operation must be performed by a professional technician informed about the risks.

Repairs on the product must be carried out exclusively by Agilent authorized personnel.

Instructions for Use

Improper use

Agilent Technologies declines all responsibility, deriving from the improper use of the AGC-100.

Agilent assumes no liability and the warranty becomes null and void if the end-user or third parties:

- disregard the information in this document
- use the product in a non-conforming manner
- make any kind of interventions (modifications, alterations etc.) on the product
- use the product with accessories not listed in the corresponding product documentation.

The end-user assumes the responsibility in conjunction with the process media used.

Instructions for Use

Safety guideline for AGC-100

- Adhere to the applicable regulations and take the necessary precautions for all work you are going to do and consider the safety instructions in this document.
- The device must not be connected to the internet.

Communicate the safety instructions to all other users.

CAUTION

Electronic components

Inappropriate storage (static electricity, humidity etc.) may damage electronic components.

Store the product in an antistatic bag or container. Observe the relevant specifications under Technical Data.

Disposal

Meaning of the "WEEE" logo found in labels

The following symbol is applied in accordance with the EC WEEE (Waste Electrical and Electronic Equipment) Directive.

This symbol (valid only in countries of the European Community) indicates that the product it applies to must NOT be disposed of together with ordinary domestic or industrial waste but must be sent to a differentiated waste collection system. The end user is therefore invited to contact the supplier of the device, whether the Parent Company or a retailer, to initiate the collection and disposal process after checking the contractual terms and conditions of sale.



Figure 1 Logo "WEEE"

For more information refer to:

<http://www.agilent.com/environment/product/index.shtml>

Service

Should a customer need support, please contact local distributor or directly e-mail to:

vpt-customer@agilent.com

vpl-customer@agilent.com

Completion of the "Request for Return" form is required to return your product to Agilent for service (provided at the end of this manual).

Separating the components

After disassembling the product, separate its components according to the following criteria:

Electronic and non-electronic components

Such components must be separated according to their materials and recycled.

2 Technical Information

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Product Description

AGC-100 is a single channel controller compatible with the FRG-7xx, PVG-5xx, PCG-75x, and CDG-500 series of active gauges and automatically identifies the active gauge connected. This gauge controller has both USB and ethernet ports.

AGC-100 has user selectable measurement unit (mbar, Torr, Pascal) and adjustable setpoint control. It can also display readings from almost any competitor's Pirani and cold cathode gauges.

This document applies to products with part numbers:

AGC100 AGC-100 single channel controller for FRG-7xx, PVG-5xx, PCG75x and CDG-500 series of active gauges.

In all communications with Agilent Technologies, please specify the information on the product nameplate:

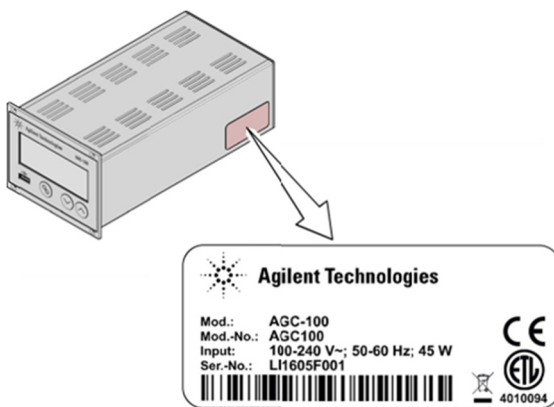


Figure 2

This manual is based on firmware version V1.02.

If your unit does not work as described in this document, please check that it is equipped with the above firmware version.

All dimensions are indicated in mm.

The Vacuum Gauge Controller AGC-100 is used together with Agilent gauges for total pressure measurement. All products must be operated in accordance with their respective operating manuals.

Content

Each AGC-100 comes with:

- 1× Vacuum Gauge Controller
- 1× Power cord
- 1× Rubber bar
- 2× Rubber feet
- 4× Collar screws
- 4× Plastic sleeves

Safety

Adhere to the applicable regulations and take the necessary precautions for all work you are going to do and consider the safety instructions in this document.

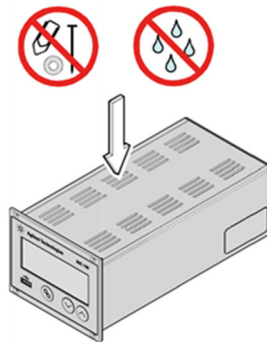
WARNING

DANGER: mains voltage



Contact with live parts is extremely hazardous when any objects are introduced or any liquids penetrate into the unit.

Make sure no objects enter through the louvers and no liquids penetrate into the equipment.



Technical Information

Disconnecting device

The disconnecting device must be readily identifiable by and easily reached by the user. To disconnect the unit from the mains supply, you must unplug the mains cable.

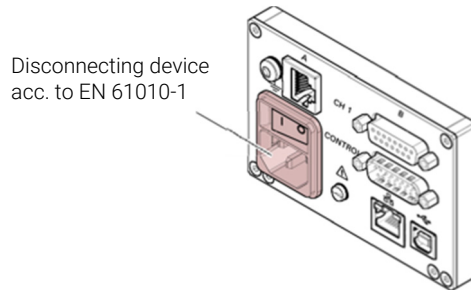


Figure 3

Communicate the safety instructions to all other users.

Agilent Technologies assumes no liability and the warranty is rendered null and void if the end-user or third parties.

- disregard the information in this document
- use the product in a non-conforming manner
- make any kind of interventions (modifications, alterations etc.) on the product
- use the product with accessories not listed in the corresponding product documentation.

Technical Specifications

Table 1 Technical Specifications

| AGC-100 Specifications | Value |
|-------------------------------|--|
| Mains specifications | |
| Voltage | 100 ... 240 V (ac) ±10% |
| Frequency | 50 ... 60 Hz |
| Power consumption | ≤45 W |
| Overvoltage category | II |
| Protection class | 1 |
| Connection | European appliance connector IEC 320 C14 |
| Ambience | |
| Temperature | |
| Storage | –20 ... +60 °C |
| Operation | + 5 ... +50 °C |
| Relative humidity | ≤80% up to +31 °C, decreasing to 50% at +40 °C |
| Use | indoors only max. altitude 2000 m NN |
| Pollution degree | II |
| Degree of protection | IP30 |
| Gauge connections | |
| Number | 1 |
| Gauge connections per channel | RJ45 (FCC68), 8-pin D-Sub, 15-pin, female (connected in parallel) |
| Compatible gauges | |
| Pirani | PVG-500, PVG-502, PVG-550, PVG-552 |
| Pirani / Capacitance | PCG-750, PCG 752 |
| Cold cathode | IMG-500 |
| Cold cathode / Pirani | FRG-700, FRG-702 |
| Hot ionization / Pirani | FRG-720, FRG-730 |
| Capacitance | CDG-500 |
| Gauge supply | |
| Voltage | +24 V (dc) ±5% |
| Ripple | <±1% |
| Current | 0 ... 1 A (per channel) |
| Power | 25 W (per channel) |
| Fuse protection | 1.5 A (per channel) with PTC element, self-resetting after turning the unit off or disconnecting the gauge. The supply conforms to the grounded protective extra low voltage requirements |
| Operation | |
| Front panel | via 3 keys |
| Remote control | via USB type B interface via Ethernet interface |

Technical Information

Table 1 Technical Specifications (continued)

| AGC-100 Specifications | Value |
|---------------------------------------|--|
| Measurement values | |
| Measurement ranges | depending on gauges |
| Measurement error analog | |
| Gain error | ≤0.01% F.S. (typical) ≤0.10% F.S. (over temperature range, time) |
| Offset error | ≤0.01% F.S. (typical) ≤0.10% F.S. (over temperature range, time) |
| Measurement rate analog | ≥100 / s |
| Display rate | ≥10 / s |
| Filter time constant | |
| Slow | 8 s (fg = 0.02 Hz) |
| Normal | 800 ms (fg = 0.2 Hz) |
| Fast | 160 ms (fg = 1 Hz) |
| Measurement units | mBar, hPa, Torr, Pa, Micron, V |
| Offset correction | for linear gauges |
| Calibration factor | 0.10 ... 10.00 |
| A/D converter | resolution 0.001% F.S. (the measurement values of FRG-720, FRG-730, CDG-500 are transmitted digitally) |
| Switching functions | |
| Number | 2 |
| Reaction delay | ≤10 ms, if switching threshold close to measurement value (for larger differences consider filter time constant) |
| Adjustment range | depending on gauge |
| Hysteresis | ≥1% F.S. for linear gauges, ≥10% of measurement value for logarithmic gauges |
| Switching function relays | |
| Contact type | floating changeover contact |
| Load max. | 60 V(dc), 30 W (ohmic) 30 V(ac), 1 A (ohmic) |
| Service life | |
| Mechanical | 1×10 ⁸ cycles |
| Electrical | 1×10 ⁵ cycles (at max. load) |
| Contact positions connector (CONTROL) | D-Sub appliance connector, male, 15-pin |
| Error signal | |
| Number | 1 |
| Reaction time | ≤10 ms |

Technical Information

Table 1 Technical Specifications (continued)

| AGC-100 Specifications | Value |
|---------------------------------------|---|
| Error signal relay | |
| Contact type | floating normally open contact |
| Load max. | 60 V(dc), 0.5 A, 30 W (ohmic) 30 V(ac), 1 A (ohmic) |
| Service life | |
| Mechanical | 1×10 ⁸ cycles |
| Electrical | 1×10 ⁵ cycles (at max. load) |
| Contact positions connector (CONTROL) | D-Sub appliance connector, male, 15-pin |
| Analog outputs | |
| Number | 1 |
| Voltage range | -5 ... +14.5 V (dc) If no gauge is connected, +14.5 V (dc) is output |
| Deviation from display value | ±20 mV |
| Output resistance | <50 Ω |
| Measuring signal vs. pressure | depending on gauge |
| CONTROL connecto | D-Sub appliance connector, male, 15-pin |
| USB Type A interface | |
| Protocol | ACK/NAK, ASCII with 3-character mnemonics |
| Data format | bi-directional data flow, 1 start bit, 8 data bits, 1 stop bit, no parity bit, no handshake |
| Transmission rate | 9600, 19200, 38400, 57600, 115200 |
| Ethernet interface | |
| Protocol | ACK/NAK, ASCII with 3-character mnemonics, |
| Data format | bi-directional, 1 start bit, 8 data bits, 1 stop bit, no parity bit, no handshake |
| Transmission rate | 9600, 19200, 38400, 57600, 115200 |
| IP Address | DHCP (default) or manual setting |
| MAC Address | readable via "MAC" parameter |
| Use | For incorporation into a rack or control panel or as a desktop unit |
| Weight | |
| AGC-100 | 0.85 kg |

AGC-100 Outline

Dimensions [mm]

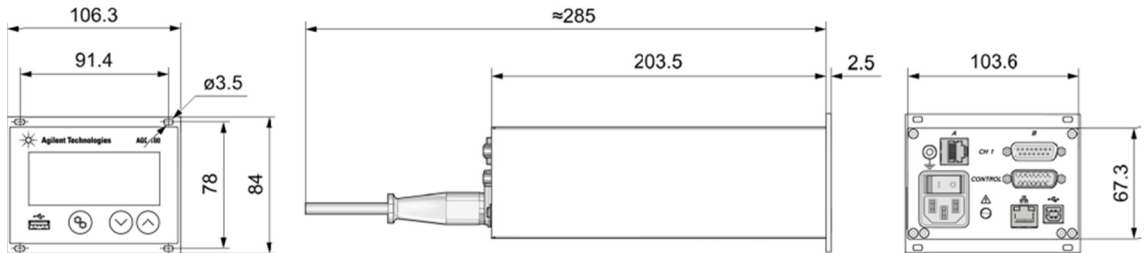


Figure 4 AGC-100 Outline

Installation

Skilled personnel

WARNING



The unit may only be installed by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

The unit is suited for incorporation into a 19" rack or a control panel or for use as a desktop unit.

WARNING



Putting a product which is visibly damaged into operation can be extremely hazardous. If the product is visibly damaged do not put it into operation and make sure it is not inadvertently put into operation.

Rack Installation

The unit is designed for installation into a 19" rack chassis adapter according to DIN 41 494. For this purpose, four collar screws and plastic sleeves are supplied with it.

WARNING



DANGER: protection class of the rack.

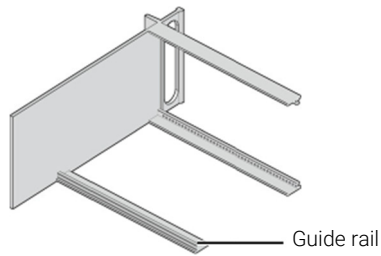
If the product is installed in a rack, it is likely to lower the protection class of the rack (protection against foreign bodies and water) e.g. according to the EN 60204-1 regulations for switching cabinets.

Take appropriate measures for the rack to meet the specifications of the protection class.

Technical Information

Guide rail

In order to reduce the mechanical strain on the front panel of the AGC-100, preferably equip the rack chassis adapter with a guide rail.



Mounting height

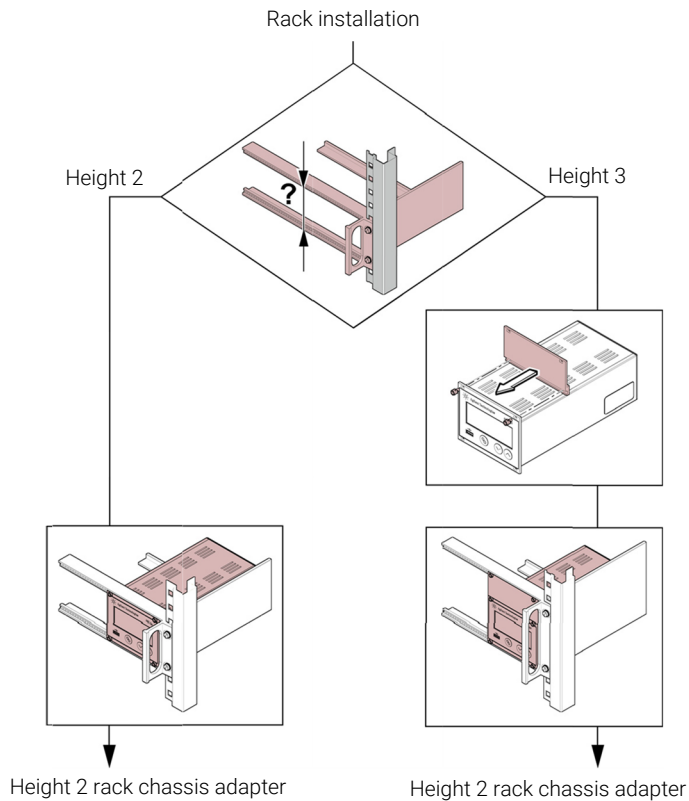


Figure 5

Technical Information

Height 2 rack chassis adapter

- 1 Secure the rack chassis adapter in the rack frame.

The maximum admissible ambient temperature must not be exceeded and the air circulation must not be obstructed.

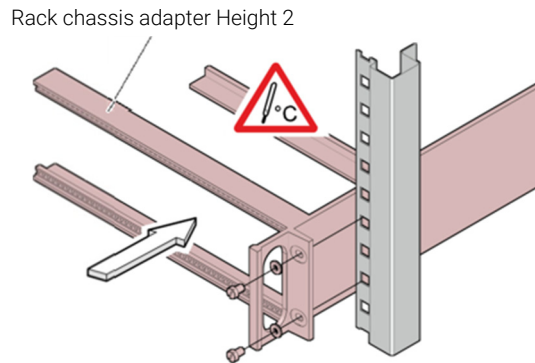


Figure 6

- 2 Slide the AGC-100 into the adapter.

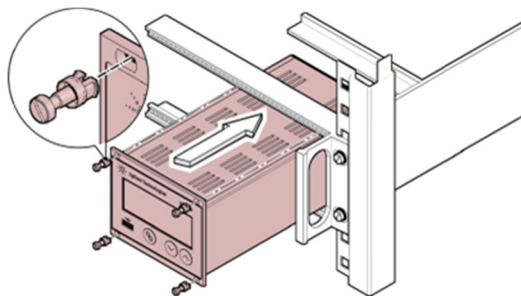


Figure 7

... and fasten the AGC-100 to the rack chassis adapter using the screws supplied with it.

Technical Information

Height 3 rack chassis adapter

For incorporation into a 19" rack chassis adapter, height 3, an adapter panel (incl. two collar screws and plastic sleeves) is available.

- 1 Secure the rack chassis adapter in the rack frame.

The maximum admissible ambient temperature must not be exceeded and the air circulation must not be obstructed.

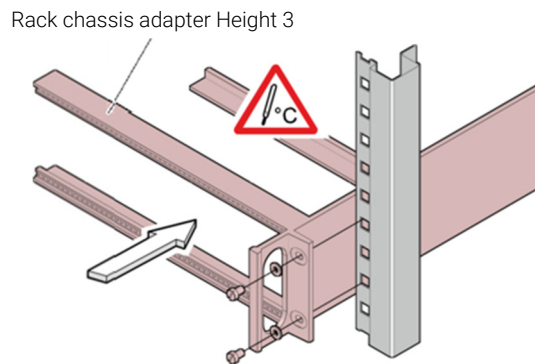


Figure 8

- 2 Mount the adapter panel as upper extension to the front panel of the AGC-100 using the screws supplied with the adapter panel.

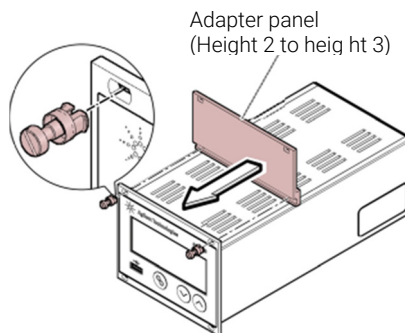


Figure 9

Technical Information

- 3 Slide the AGC-100 into the adapter.

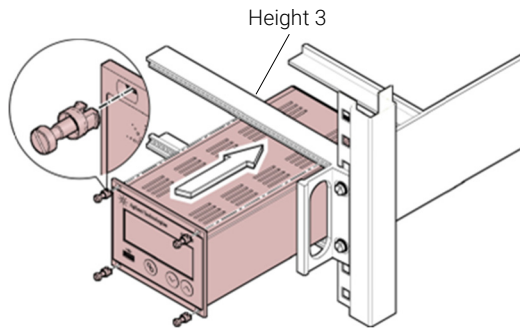


Figure 10

... and fasten the AGC-100 to the rack chassis adapter using the screws supplied with it.

Installation in a control panel

WARNING

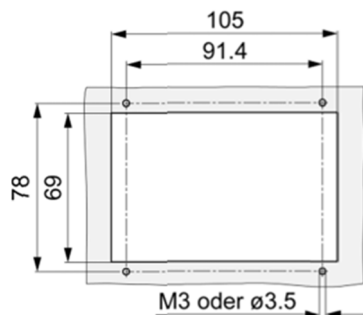


DANGER: protection class of the rack.

If the product is installed in a rack, it is likely to lower the protection class of the rack (protection against foreign bodies and water) e.g. according to the EN 60204-1 regulations for switching cabinets.

Take appropriate measures for the rack to meet the specifications of the protection class.

For mounting the AGC-100 into a control panel, the following cut-out is required:



The maximum admissible ambient temperature must not be exceeded and the air circulation must not be obstructed.

For reducing the mechanical strain on the front panel of the AGC-100, preferably support the unit.

- 1 Slide the AGC-100 into the cut-out of the control panel ...

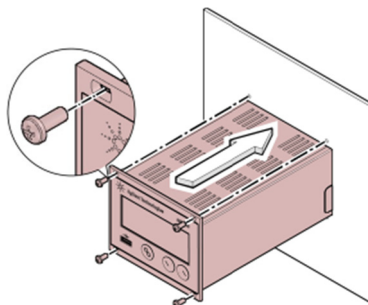


Figure 11

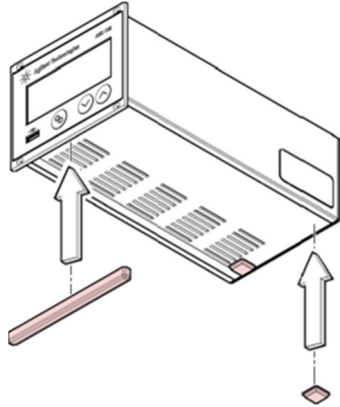
... and secure it with four M3 or equivalent screws.

Technical Information

Use as Desktop Unit

The AGC-100 may also be used as a desktop unit. For this purpose, two self-adhesive rubber feet and a slip-on rubber bar are supplied with it.

- 1 Stick the two supplied rubber feet to the rear part of the bottom plate ...



Select a location where the admissible maximum ambient temperature is not exceeded (e.g. due to sun irradiation).

Figure 12

... and slip the supplied rubber bar onto the bottom edge of the front panel.

Technical Information

Mains Power Connector

WARNING



DANGER: line voltage.

Incorrectly grounded products can be extremely hazardous in the event of a fault.

Use only a 3-conductor power cable with protective ground. The mains power connector may only be plugged into a socket with a protective ground. The protection must not be nullified by an extension cable without protective ground.

The unit is supplied with a power cord if required. If the mains connector is not compatible with your system, use your own, suitable cable with protective ground ($3 \times 1.5 \text{ mm}^3$).

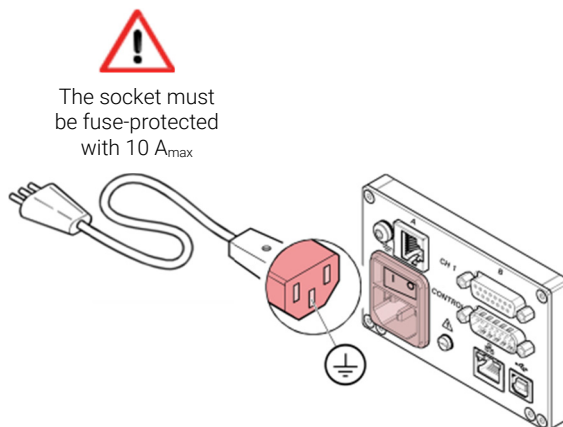


Figure 13

If the unit is installed in a switching cabinet, the mains voltage should be supplied and turned on via a central distributor.

Technical Information

Ground Connection

On the rear of the unit is a screw enabling the AGC-100 where necessary to be connected via a ground conductor, e.g. with the protective ground of the pump stand.

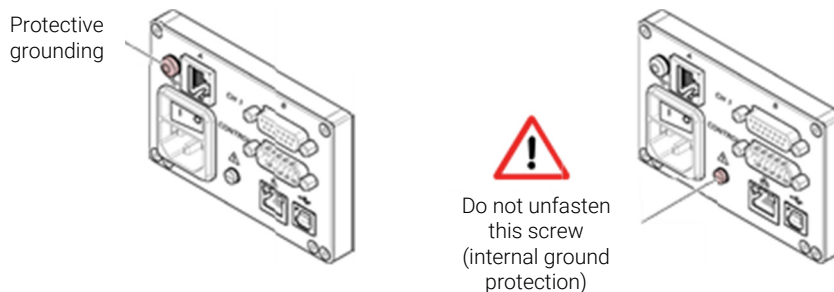


Figure 14

Gauge Connector CH

For each channel there are two connections available which are connected in parallel:

- one RJ45 appliance connector, female, 8-pin (CH A)
- one D-Sub appliance connector, female, 15-pin (CH B).

NOTE

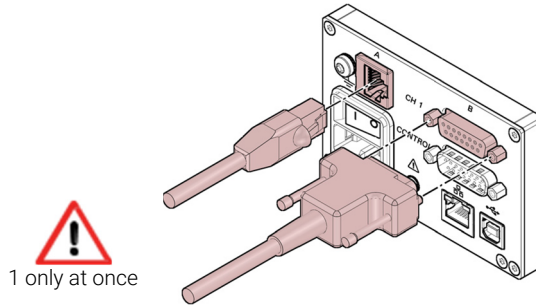
Connect the gauge to the CH 1 connector via a sensor cable set available from us (see sales literature) or your own, screened (electromagnetic compatibility) sensor cable. Use compatible gauges.

Technical Information

CAUTION

Caution: Multiple connection.

Only one sensor may be connected to each of the channels (connection CH A or CH B). Otherwise the connected sensors may be damaged.



WARNING

DANGER: Hazardous voltage.

According to EN 61010, voltages exceeding 30 V (ac) or 60 V (dc) are hazardous.

Only connect a protective low voltage (PELV).

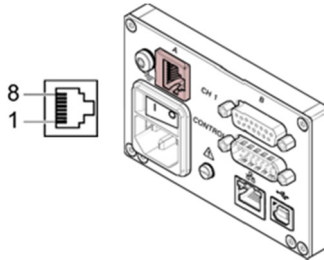


Technical Information

Pin assignment CH 1

Appliance socket RJ45

Pin assignment of the female 8-pin RJ45 appliance connectors:

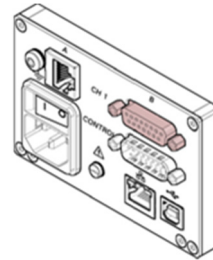
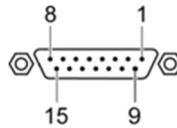


| Pin | Signal | |
|-----|----------------|-------------------------------------|
| 1 | Supply | +24 V (dc) |
| 2 | Supply common | GND |
| 3 | Signal input | (measuring signal 0 ... +10 V (dc)) |
| 4 | Identification | |
| 5 | Signal common | |
| 6 | Status | |
| 7 | HV_L | |
| 8 | HV_H / HV_EMI | |

Technical Information

Appliance socket D-Sub

Pin assignment of the female 15-pin D-Sub appliance connectors:



| Pin | Signal |
|-----|--|
| 1 | EMI status |
| 2 | Signal input (measuring signal 0 ... +10 V (dc)) |
| 3 | Status |
| 4 | HV_H / HV_EMI |
| 5 | Supply common GND |
| 6 | n.c. |
| 7 | Degas |
| 8 | Supply +24 V (dc) |
| 9 | n.c. |
| 10 | Identification |
| 11 | Supply +24 V (dc) |
| 12 | Signal commo |
| 13 | RxD |
| 14 | TxD |
| 15 | Chassis |

Technical Information

Control Connector

This connector allows the user to read the measuring signal, evaluate the state of the floating contacts of the error relay.

NOTE

Connect the peripheral components to the CONTROL connector on the rear of the unit using your own, screened (electromagnetic compatibility) cable.

WARNING



DANGER: Hazardous voltage.

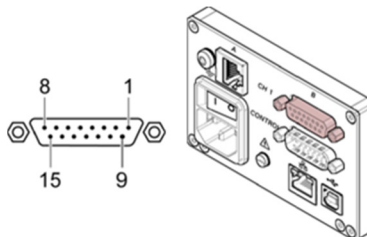
According to EN 61010, voltages exceeding 30 V (ac) or 60 V (dc) are hazardous.

Only connect a protective low voltage (PELV).

Technical Information

Pin assignment

Pin assignment of the female 15-pin D-Sub appliance connectors:



| Pin | Signal | |
|-----|---|---|
| 1 | Analog output -5 ... +13 V (dc) | |
| 2 | Analog output GND | |
| 3 | Switching function 1 | |
| 4 | Pressure above threshold or power supply turned off | Pressure below threshold |
| 5 | | |
| 6 | HV_H on +24 V off 0 V | |
| 7 | +24 V (dc) 200 mA | |
| 8 | Chassis = GND | Fuse-protected at 300 mA with PTC element, self-reseting after power off or pulling the CONTROL connector. Meets the requirements of a grounded protective extra low voltage. |
| 9 | Error signal | |
| 10 | No error | Error or power supply turned off |
| 11 | Switching function 2 | |
| 12 | Pressure above threshold or power supply turned off | Pressure below threshold |
| 13 | | |
| 14 | | |
| 15 | Chassis = GND | |

NOTE

The analog output (pin 1) differs from the displayed value by no more than ± 20 mV.

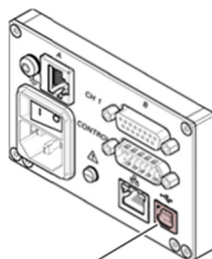
Technical Information

Interface Connector USB Type B

The USB Type B interface connector facilitates direct communication with the AGC-100 via a computer, e.g. firmware update, parameter saving (read/write).

NOTE

Connect the USB interface connector to the connector on the rear of the unit using a screened (electromagnetic compatibility) cable.



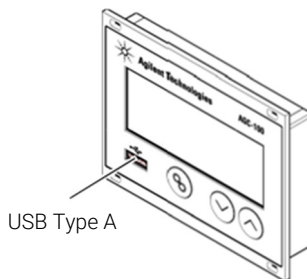
USB Type B

Interface Connector USB Type A

The USB Type A interface connector with master functionality is situated on the front of the unit and is used for the connection of a USB memory stick, e.g. firmware update, parameter saving (read/write), data logger.

NOTE

Connect the USB memory stick to the connector unit.



USB Type A

Operation

Front panel

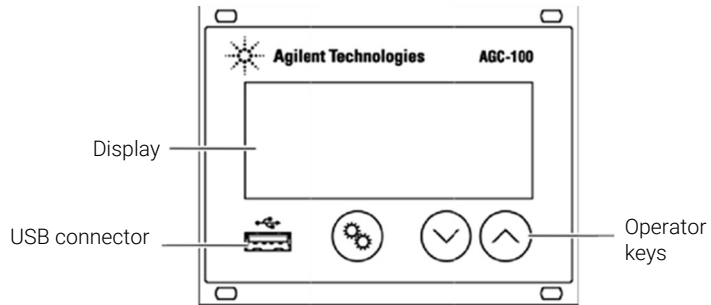


Figure 15

Display

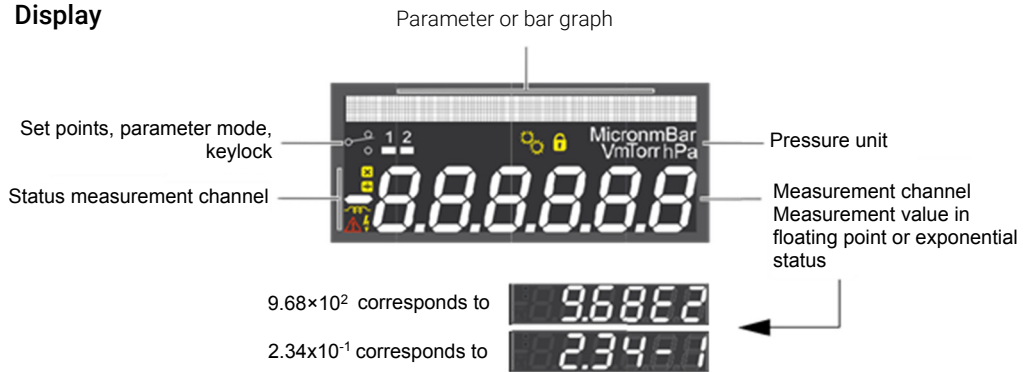


Figure 16

Technical Information

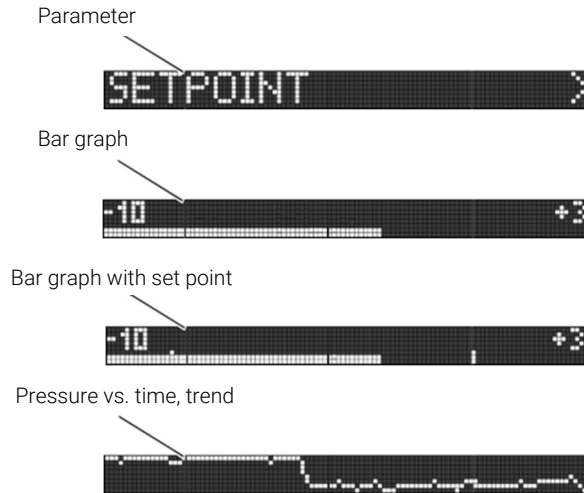
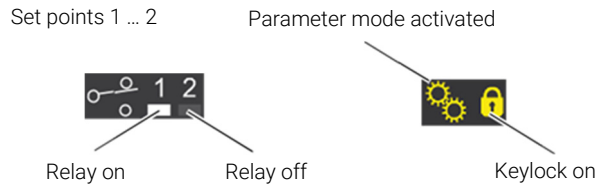
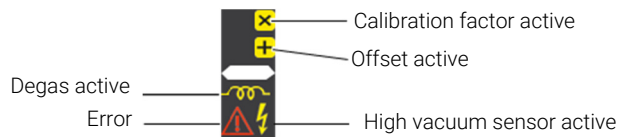


Figure 17

Set points, parameter mode, keylock



Measurement channel specifically



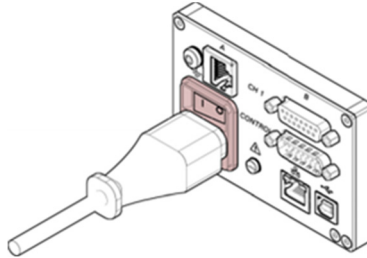
Technical Information

Turning the AGC-100 ON and OFF

Turning the AGC-100 ON

The power switch is on the rear of the unit.

Turn the AGC-100 ON with the power switch (or centrally, via a switched power distributor, if the unit is incorporated in a rack).



After power ON, the AGC-100:

- automatically performs a self-test
- identifies the connected gauges
- activates the parameters that were in effect before the last power off
- switches to the Measurement mode
- adapts the parameters if required (if a different gauge was previously connected).

Turning the AGC-100 OFF

Turn the AGC-100 OFF with the power switch (or centrally, via a switched power distributor, if the unit is incorporated in a rack).

Wait at least 10 s before turning the AGC-100 ON again in order for it to correctly initialize itself.

Operating Modes

The AGC-100 works in the following operating modes:

- Measurement mode
for displaying measurement values or statuses
- Parameter mode
for displaying and editing parameters
 - Switching function parameter group **SET POINT** >
for entering and displaying thresholds
 - Gauge parameter group **SENSOR** >
for entering and displaying gauge parameters
 - Gauge control group **SENSOR-CONTROL** >
for entering and displaying gauge control parameters
 - General parameter group **GENERAL** >
for entering and displaying general parameters
 - Test program group **TEST** >
for running internal test programs
 - Data logger mode **DATA LOGGER** >
for logging measurement data
 - Parameter transfer mode **SETUP** >
for saving (read/write) parameters

Technical Information

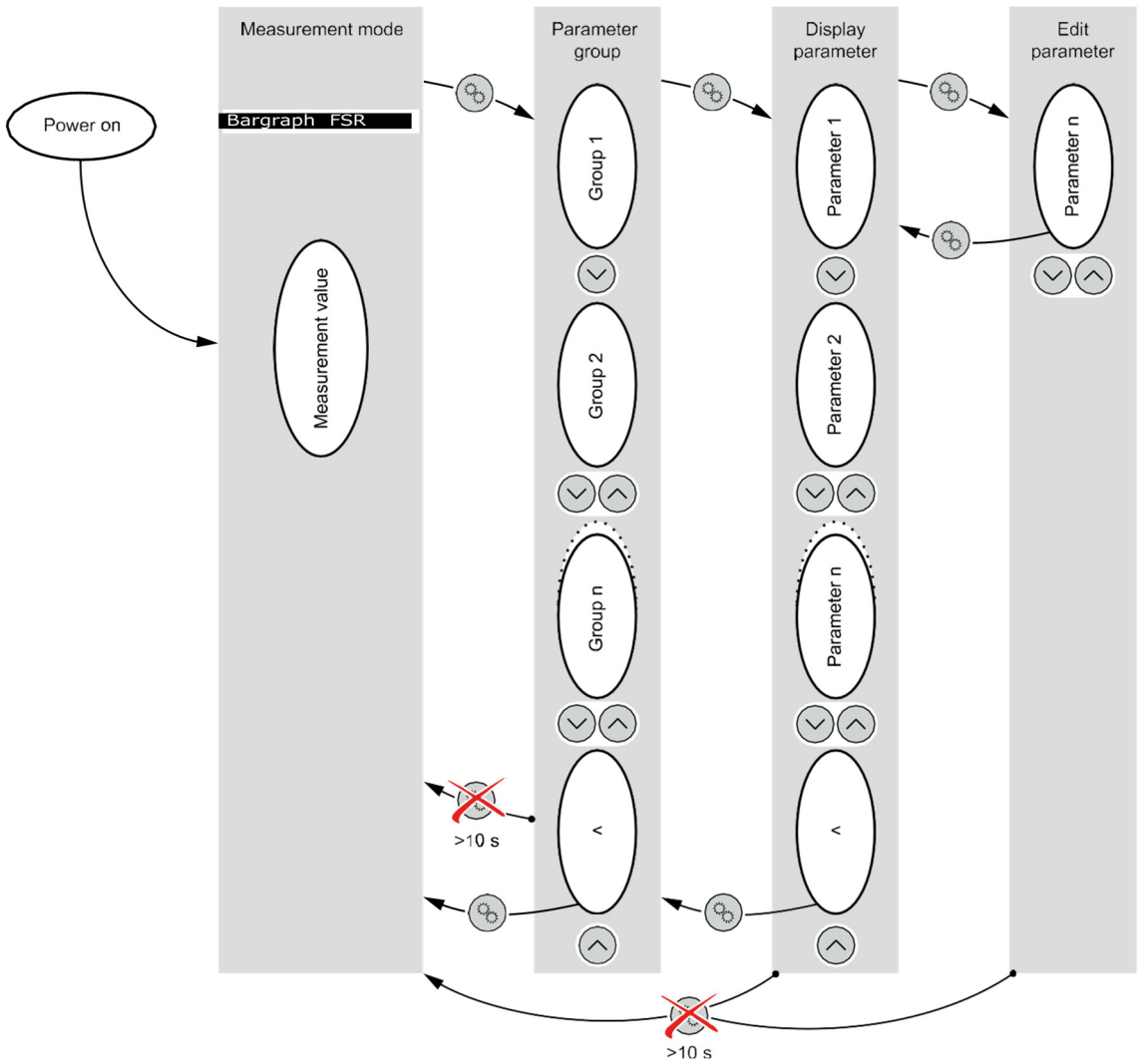


Figure 18

Technical Information

Measurement Mode

Measurement mode is the standard operating mode of the AGC-100 with display of:

- a bar graph (if required)
- a measurement value for each measurement channel
- status messages for each measurement channel

Adjusting bar graph

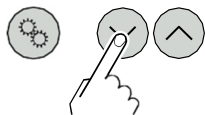
If required a bar graph may be displayed.

Turning the gauge ON/OFF

Certain gauges can be turned ON and OFF manually, provided the gauge control is set to **S-ON HAND**

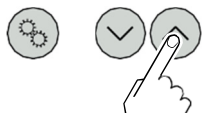
Available for the following gauges:

- Pirani (PVG)
- Pirani / Capacitance (PCG)
- Cold cathode (IMG)
- Cold cathode / Pirani (FRG-70x)
- Hot ionization / Pirani (FRG-720, FRG-730)
- Capacitance (CDG)



Press key for >1 s:

Gauge switches off. Instead of a measurement value the word OFF is displayed.



Press key for >1 s:

Gauges switches on. Instead of the measurement value a status message may be displayed.

Technical Information

Switching the emission ON/OFF

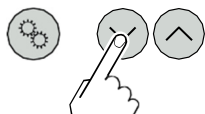
For certain gauges the emission can be switched on and off manually, provided the sensor parameter is set to **EMISSION HAND**.

NOTE

Switching on the emission is only possible if the pressure is below 2.4×10^{-2} mbar.

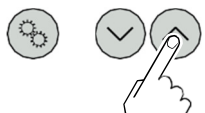
Available for the following gauges:

- Pirani (PVG)
- Pirani / Capacitance (PCG)
- Cold cathode (IMG)
- Cold cathode / Pirani (FRG-70x)
- Hot ionization / Pirani (FRG- FRG-730 only)
- Capacitance (CDG)



Press key for >1 s:

The emission is switched off. The measurement value of the Pirani sensor is displayed instead of the measurement value of the hot cathode ionization sensor.

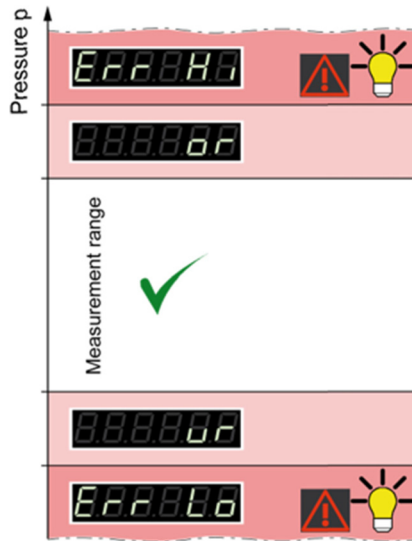


Press key for >1 s:

The emission is switched on. The measurement value of the hot cathode ionization sensor is displayed and solid.

Technical Information

Measurement range



If the unit is operated with linear gauges (CDG), negative pressures may be indicated.

Possible causes:

- negative drift
- activated offset correction.

Technical Information

Displaying the gauge identification



Press keys for >0.5 ... 1 s:
For the measurement channel in question the type of the connected gauge is automatically identified and displayed for 6 s:

| | |
|--|--|
| Pirani gauge (PVG-500, PVG502, PVG-550, PVG552) | PVGxx |
| Pirani / Capacitance gauge (PCG-750, PCG-752) | PCG75x |
| Cold cathode gauge (IMG-500) | IMG-500 |
| Cold cathode / Pirani gauge (FRG-700, FRG-702) | FRG70x |
| Hot ionization / Pirani gauge | |
| | FRG-720 FRG720 |
| | FRG-730 FRG730 |
| Linear gauge (capacitance, digital) (CDG-500) | CGG500 Vx.xx Version during 3s, then CDG500 1000MBAR FSR during 3 s |
| No gauge connected | noSENSOR |
| Gauge connected, but not identifiable | NoIDENT. |

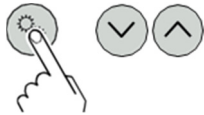
Changing to the Parameter mode



Technical Information

Parameter Mode

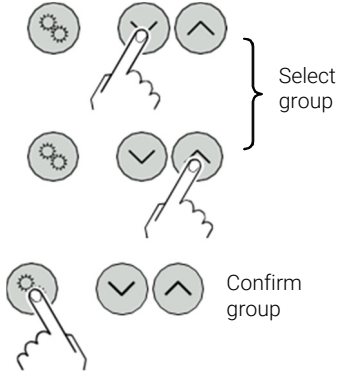
The Parameter mode is used for displaying, editing and entering parameter values as well as for testing the AGC-100 and for saving measurement data. For ease of operation the individual parameters are divided into groups.



Unit switches from measurement mode to parameter mode. The respective parameter group is displayed in place of the bar graph.

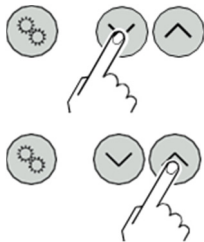


Selecting a parameter group



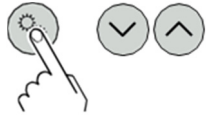
Switching function parameters
Gauge parameters
Gauge control
General parameters
Test parameters
Data logger
Parameter transfer

Reading a parameter in a parameter group



Technical Information

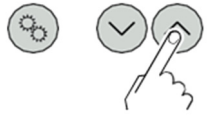
Editing and saving a parameter in a parameter group



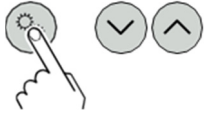
Confirm the parameter. The value flashes and can now be edited.



Edit the value.



Save the change and return to read mode.



Technical Information

Switching Function Parameters

SETPOINT > The switching function parameter group is used for displaying, editing and entering threshold values and assigning the two switching functions to a measurement channel.

Parameters in this group

SP1-CH Configuration of switching function 1

SP1-L Switching function 1 lower threshold

SP1-H Switching function 1 upper threshold

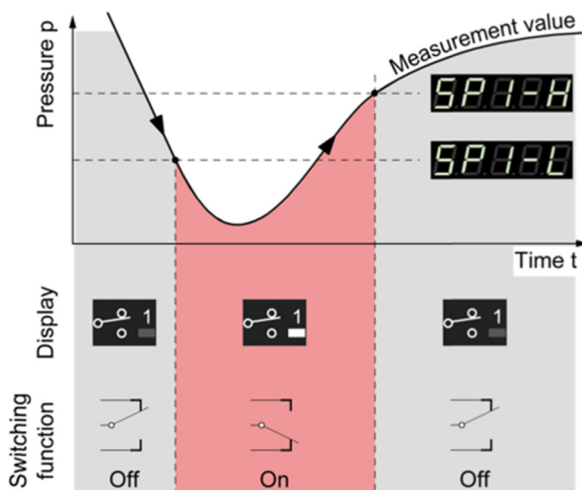
SP2-CH Configuration of switching function 2

SP2-L Switching function 2 lower threshold

SP2-H Switching function 2 upper threshold

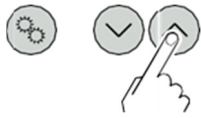
< One level back

The AGC-100 has two switching functions with two adjustable thresholds each. The status of the switching functions is displayed on the front panel and can be evaluated via the floating contacts at the CONTROL, respectively RELAY connector.



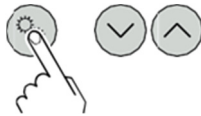
Technical Information

Selecting a parameter



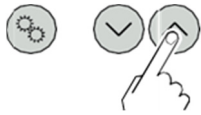
The name of the parameter and the currently valid parameter value are displayed.

e.g.: **SP1-CH DISABLED**
Switching function 1 turned OFF



Select parameter.
The value flashes and can now be edited.

Editing and saving the parameter



Press key for <1 s:
The value is increased/decreased by 1 increment.



Press key for >1 s:
The value is increased/decreased continuously.



Save the change and return to read mode.

NOTE

We recommend setting the upper threshold $\frac{1}{2}$ decade above the lower, or the lower threshold $\frac{1}{2}$ decade below the upper, threshold limit.

Technical Information

Configuring a switching function

| | |
|------------------------|---|
| SP1-CH | Configuration of switching function 1 |
| SP1-CH DISABLED | Switching function 1 is factory-deactivated |
| SP1-CH ENABLED | Switching function 1 is always turned ON |
| SP1-CH 1 | Switching function 1 is assigned to channel 1 |

NOTE

The lower and the upper threshold of a switching function are always assigned to the same channel. The last assignment is valid for both thresholds.

Limits of the lower switching thresholds

SP1-L The lower threshold (Setpoint low) defines the pressure at which the switching function is activated when the pressure is dropping.

e.g.: **SP1-L 5.00-4** gauge dependent.

If another gauge type is connected, the AGC-100 automatically adjusts the switching threshold if required.

| | SPx-L min. | SPx-L max. |
|----------------|-----------------------|--------------|
| PVG5xxx | 2×10^{-3} *) | |
| PCG75x | 2×10^{-3} *) | |
| IMG500 | 1×10^{-9} | |
| FRG70x | 1×10^{-9} | = SPx-H max. |
| FRG720 | 1×10^{-8} | |
| FRG730 | 1×10^{-8} | |
| CDG500 | F.S. / 1000 | |

all values in mbar, GAS=nitrogen

*) 2×10^{-4} mbar if RNG-EXT (Pirani range extension) is activated.

NOTE

The minimum hysteresis between the upper and lower switching threshold amounts to at least 10% of the lower threshold (logarithmic gauges) or 1% of the full scale value (linear gauges). The upper threshold is if necessary automatically adjusted to a minimum hysteresis. This prevents unstable states.

Technical Information

Limits of the upper switching thresholds

| | Value | |
|---|--|--------------------|
| SP1-H e.g.: SP1-H 1500 | The upper switching threshold (Setpoint high) defines the pressure at which the switching function is deactivated when the pressure is rising. Gauge dependent. If another gauge type is connected, the AGC-100 automatically adjusts the switching threshold if required. | |
| | SPx-H min. | SPx-H max. |
| PVG5xx | = SPx-L min. | 2×10^{-3} |
| PCG75x | | 2×10^{-3} |
| IMG500 | | 1×10^{-2} |
| FRG70x | | 1×10^{-3} |
| FRG720 | | 1×10^{-3} |
| FRG730 | | 1×10^{-3} |
| CDG500 | | F.S. |

all values in mbar, GAS=nitrogen

NOTE

The minimum hysteresis between the upper and lower switching threshold amounts to at least 10% of the lower threshold (logarithmic gauges) or 1% of the full scale value (linear gauges). The upper threshold is if necessary automatically adjusted to a minimum hysteresis. This prevents unstable states.

Technical Information

Gauge parameters

SENSOR

The sensor parameter group is used for displaying, entering and editing parameters of the connected gauges.

Parameters in this group

| | |
|-----------------|--|
| DEGAS | Cleaning the electrode system. |
| FSR | Measurement range linear gauges. |
| FILTER | Measurement value filter. |
| OFFSET | Offset correction. |
| GAS | Correction factor for other gases. |
| COR | Offset correction. |
| HV-CTRL | Activating / deactivating high vacuum measurement circuit. |
| EMISSION | Emission. |
| FILAMENT | Filament selection. |
| DIGITS | Display resolution. |
| < | One level back. |

Some parameters are not available for all gauges and thus not always displayed.

| | 33 | 34 | 35 | 36 | 38 | 38 | 39 | 39 | 39 | 40 |
|--------|-------|-----|--------|--------|-----|-----|---------|----------|----------|--------|
| | DEGAS | FSR | FILTER | OFFSET | GAS | COR | HV-CTRL | EMISSION | FILAMENT | DIGITS |
| PVG5XX | – | – | ✓ | – | ✓ | ✓ | – | – | – | ✓ |
| PVG75x | – | – | ✓ | – | ✓ | ✓ | – | – | – | ✓ |
| IMG500 | – | – | ✓ | – | ✓ | ✓ | ✓ | – | – | ✓ |
| FRG70x | – | – | ✓ | – | ✓ | ✓ | – | – | – | ✓ |
| FRG720 | ✓ | – | ✓ | – | ✓ | ✓ | – | – | – | ✓ |
| FRG730 | ✓ | – | ✓ | – | ✓ | ✓ | – | ✓ | ✓ | ✓ |
| CDG500 | – | ✓ | ✓ | ✓ | – | ✓ | – | – | – | ✓ |

Available for

Technical Information

Degas

Contamination deposits on the electrode system of hot cathode gauges may cause instabilities of the measurement values. The degas function facilitates cleaning of the electrode system.

NOTE




The degas process works only at pressures below 7.2×10^{-6} mbar.

NOTE

FRG730 gauges: The Degas function acts only upon the active filament.

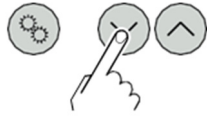
Available for the following gauges:

- Pirani (PVG)
- Pirani / Capacitance (PCG)
- Cold cathode (IMG)
- Cold cathode / Pirani (FRG-70x)
- Hot ionization / Pirani (FRG-720, FRG-730)
- Capacitance (CDG)

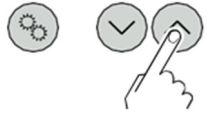
| | Value | |
|------------------|--|---|
| DEGAS | |  |
| DEGAS OFF | Normal operation (Degas blocked) |  |
| DEGAS ON | Degas: The electron collection grid is heated to ≈ 700 °C by electron bombardment and the electrode system is thus cleaned. Duration = 180 s. |  |

Technical Information

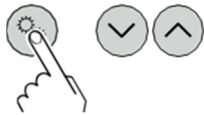
Editing and saving a parameter



Start Degas. Duration of the Degas function 180 seconds (may also be aborted).



Abort Degas.



Save change and return to read mode.

Technical Information

Measuring range (F.S.) of linear gauges

The full scale (F.S.) is automatically recognized.

Available for the following gauges:

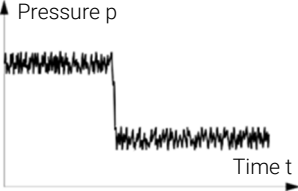
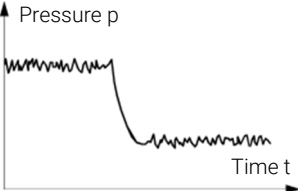
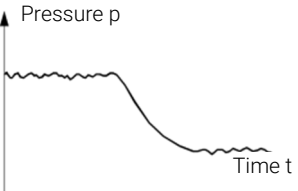
- Pirani (PVG)
- Pirani / Capacitance (PCG)
- Cold cathode (IMG)
- Cold cathode / Pirani (FRG-70x)
- Hot ionization / Pirani (FRG-720, FRG-730)
- Capacitance (CDG)

| | Value |
|----------------------------|--|
| FSR | |
| e.g.: FSR 1000 MBAR | 0.01 mbar, 0.02 mbar, 0.05 mbar 0.01 Torr, 0.02 Torr, 0.05 Torr 0.10 mbar, 0.25 mbar, 0.50 mbar 0.10 Torr, 0.25 Torr, 0.50 Torr 1 mbar, 2 mbar, 5 mbar 1 Torr, 2 Torr, 5 Torr 10 mbar, 20 mbar, 50 mbar 10 Torr, 20 Torr, 50 Torr 100 mbar, 200 mbar, 500 mbar 100 Torr, 200 Torr, 500 Torr 1000 mbar, 1100 mbar 1000 Torr 2 bar, 5 bar, 10 bar, 50 bar A conversion table can be found in the Appendix. |

Technical Information

Measurement value filter

The measurement value filter permits a better evaluation of unstable or disturbed measuring signals.

| | Value |
|----------------------|--|
| FILTER | |
| FILTER OFF | No measurement value filter |
| FILTER FAST | Fast: The AGC-100 responds quickly to fluctuations in the measurement value. As a result, it will respond faster to interference in the measured values.  |
| FILTER NORMAL | Normal (factory setting): Good relationship between response and sensitivity of the display and the switching function to changes in the measured values.  |
| FILTER SLOW | Slow: The AGC-100 does not respond to small changes in measured values. As a result, it will respond more slowly to changes in the measured values.  |

Technical Information

Offset correction of the controller




The offset value is displayed and readjusted according to the actual measurement value.

Available for the following gauges:

- Pirani (PVG)
- Pirani / Capacitance (PCG)
- Cold cathode (IMG)
- Cold cathode / Pirani (FRG-70x)
- Hot ionization / Pirani (FRG-720, FRG-730)
- Capacitance (CDG)

The offset correction affects:

- the displayed measurement value
- the displayed threshold value of the switching functions
- the analog outputs at the CONTROL connector

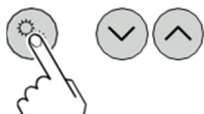
| | Value | |
|--------------------------|--|---|
| OFFSET | |  |
| OFFSET OFF | Offset correction factory-deactivated |  |
| e.g.: OFFSET 9.53 | Offset correction activated (display in the relevant units of measurement) |  |



Press key for >1.5 s:
The offset value is readjusted (the actual measurement value is accepted as new offset value).



Reset the offset value.



Save change and return to read mode.

When offset correction is activated, the saved offset value is subtracted from the actual measurement value. This allows measuring relative to a reference pressure.

Technical Information

Zero adjustment of a digital CDG

NOTE

First adjust the gauge and then the controller.



Available for the following gauges:

- Pirani (PVG)
- Pirani / Capacitance (PCG)
- Cold cathode (IMG)
- Cold cathode / Pirani (FRG-70x)
- Hot ionization / Pirani (FRG-720, FRG-730)
- Capacitance (CDG)

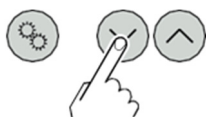
WARNING



When the zero of the gauge is readjusted, the offset correction must be deactivated.

| | Value | |
|-------------------------|------------------------------|---|
| OFFSET | |  |
| e.g.: OFFSET OFF | Zero adjustment deactivated. |  |

Lit solid after >1.5 s and as long as key remains pressed



Press >1.5 s:
Zero adjustment of the digital CDG.

NOTE

After adjusting the zero point, a zero value is displayed. Due to the measuring resolution of the CDG (noise, drift), a zero with plus/minus several digits are displayed.

Technical Information

Correction factor GAS

- the measured value to be calibrated for the preset gases N2, Ar, H2, He, Ne, Kr and Xe, or.
- manual input of the correction factor for other gases (COR).

NOTE

This parameter is not available for the unit of measurement: Volt.

| | |
|--|--------------------------|
| Available for the following gauges: | Only for pressures |
| <input checked="" type="checkbox"/> Pirani (PVG) | <1 mbar |
| <input checked="" type="checkbox"/> Pirani / Capacitance (PCG) | <1 mbar |
| <input checked="" type="checkbox"/> Cold cathode (IMG) | |
| <input checked="" type="checkbox"/> Cold cathode / Pirani (FRG-70x) | <1×10 ⁻³ mbar |
| <input checked="" type="checkbox"/> Hot ionization / Pirani (FRG-720, FRG-730) | <1×10 ⁻³ mbar |
| <input type="checkbox"/> Capacitance (CDG) | |

| | Value |
|----------------|---|
| GAS | |
| GAS N2 | Gas: nitrogen / air (factory setting) |
| GAS AR | Gas: argon |
| GAS H2 | Gas: hydrogen |
| GAS HE | Gas: helium |
| GAS NE | Gas: neon |
| GAS KR | Gas: krypton |
| GAS XE | Gas: xenon |
| GAS COR | Calibration factor for other gases by manually entering parameter COR |

Technical Information

Calibration factor COR

The calibration factor COR allows the measured value to be calibrated for other gases. This parameter is effective in the entire measurement range of the gauge.



Precondition: Parameter "GAS COR" is set (except capacitance gauges).

NOTE

This parameter is not available with the measurement unit: Volt.

Available for the following gauges:

- Pirani (PVG)
- Pirani / Capacitance (PCG)
- Cold cathode (IMG)
- Cold cathode / Pirani (FRG-70x)
- Hot ionization / Pirani (FRG-720, FRG-730)
- Capacitance (CDG)

| | Value | |
|-----------------------|---|---|
| COR | |  |
| e.g.: COR 1.00 | No correction. |  |
| e.g.: COR 1.53 | Measurement value corrected by a factor of 0.10 ... 10.00 | |



Technical Information

Turning the gauge ON / OFF

Activating / deactivating the high vacuum measurement circuit.

Available for the following gauges:

- Pirani (PVG)
- Pirani / Capacitance (PCG)
- Cold cathode (IMG)
- Cold cathode / Pirani (FRG-70x)
- Hot ionization / Pirani (FRG-720, FRG-730)
- Capacitance (CDG)

| | Value | |
|--------------------|---|---|
| HV-CTRL | |  |
| HV-CTRL ON | High vacuum measurement circuit activate |  |
| HV-CTRL OFF | High vacuum measurement circuit deactivated | |

Emission

Available for the following gauges:

- Pirani (PVG)
- Pirani / Capacitance (PCG)
- Cold cathode (IMG)
- Cold cathode / Pirani (FRG-70x)
- Hot ionization / Pirani (FRG-720, FRG-730)
- Capacitance (CDG)

| | Value |
|----------------------|---|
| EMISSION | Switching the emission ON and OFF |
| EMISSION AUTO | The emission is switched ON and OFF automatically by the gauge. |
| EMISSION HAND | The emission is switched ON and OFF by the user. |

NOTE

The symbol  lid solid, if the emission is switched ON.

Technical Information

Filament

Means of selection.

Available for the following gauges:

- Pirani (PVG)
- Pirani / Capacitance (PCG)
- Cold cathode (IMG)
- Cold cathode / Pirani (FRG-70x)
- Hot ionization / Pirani (FRG-720, FRG-730)
- Capacitance (CDG)

| | Value |
|-----------------------|--|
| FILAMENT | |
| FILAMENT AUTO | The gauge automatically alternates between the filaments |
| FILAMENT FIL 1 | Filament 1 active |
| FILAMENT FIL 2 | Filament 2 active |

Technical Information

Display resolution

Display resolution of measured values.

Available for the following gauges:

- Pirani (PVG)
- Pirani / Capacitance (PCG)
- Cold cathode (IMG)
- Cold cathode / Pirani (FRG-70x)
- Hot ionization / Pirani (FRG-720, FRG-730)
- Capacitance (CDG)

| | Value |
|--------------------|--------------------------------|
| DIGITS | |
| DIGITS AUTO | Automatic *) (factory setting) |
| DIGITS 1 | e.g. 2E-1 or 500 |
| DIGITS 2 | e.g. 2.5E-1 or 520 |
| DIGITS 3 | e.g. 2.47E-1 or 523 |
| DIGITS 4 | e.g. 2.473E-1 or 523.7 |

*) The mantissa is dependent on the connected gauge and the currently valid pressure value.

With PVG and PCG gauges in the pressure range $p < 1.0E-4$ mbar and activated RNG-EXT the display is reduced by one decimal digit.

Technical Information

Gauge Control

SENSOR-CONTROL

The sensor control group is used for displaying, entering and editing parameters which define how the connected gauges are activated/deactivated.

NOTE

This group is available for the IMG gauges only.

Parameters in this group

| | |
|-------|--------------------|
| S-ON | Gauge activation |
| S-OFF | Gauge deactivation |
| T-OFF | OFF threshold |
| < | One level back |

Gauge activation


IMG gauges can be activated by different means.

| | Value |
|---------------|--|
| S-ON | |
| S-ON HAND | Manual activation: The gauge is activated by pressing the key. |
| S-ON HOTSTART | Hot start: The gauge is automatically activated when the AGC-100 is turned on. Measurement is thus automatically resumed after a power failure. |

Technical Information

Gauge deactivation

IMG gauges can be deactivated by different means.

| | Value |
|-------------------|--|
| S-OFF | |
| S-OFF HAND | Manual deactivation: The gauge is deactivated by pressing the  key. |
| T-OFF SELF | Self control: The subsequent parameter T-OFF is used to specify the switch-OFF threshold. The sensor is switched OFF when the pressure at the sensor exceeds the switch-OFF threshold. |

OFF threshold

Definition of the OFF threshold for the gauge to be deactivated by itself.
This parameter is only available if the sensor deactivation parameter is set to S-OFF SELF.

| | Value |
|---------------------------|--|
| T-ON | |
| e.g.: T-OFF 1.00-2 | The sensor is switched off when the pressure exceeds the switch-OFF threshold. |

Technical Information

General Parameters

GENERAL > The General parameters group is used for displaying, entering and editing generally applicable system parameters

Parameters in this group

| | |
|-------------------|--|
| UNIT | Measurement unit |
| BAUD USB | Transmission rate USB interface |
| RNG-EXT | Pirani range extension |
| AO-MODE | Recorder output |
| ERRR-RELAY | Error relay |
| BARGRAPH | Bar graph display |
| BACKLIGHT | Backlight |
| SCREENSAVE | Screensaver |
| CONTRAST | Contrast adjustment |
| DEFAULT | Factory settings |
| LANGUAGE | Language |
| FORMAT | Number format, measurement value |
| END VAL | Display of measurement range end value |
| < | One level back |

Measurement unit

Unit of measured values, thresholds etc.

| | Value |
|-----------------------|--|
| UNIT | |
| UNIT MBAR | mBar (factory setting) |
| UNIT HP PASCAL | hPa |
| UNIT TORR | Torr (only available if Torr lock is not activated) |
| UNIT PASCAL | Pa |
| UNIT MICRON | Micron (= 0.001 Torr) (only available if Torr lock is not activated) |
| UNIT VOLT | V |

A change of the pressure unit influences also the pressure unit settings of the FRG-720 and FRG-730 gauges. If the measurement unit micron is selected, automatic changeover to Torr occurs above 99000 micron. Below 90 Torr automatic changeover back to the measurement unit micron occurs.

Technical Information

Transmission rate

Transmission rate of the USB interface.

| | Value |
|------------------------|-------------------------------|
| BAUD | |
| BAUD USB 9600 | 9600 baud |
| BAUD USB 19200 | 19200 baud |
| BAUD USB 38400 | 38400 baud |
| BAUD USB 57600 | 57600 baud |
| BAUD USB 115200 | 115200 baud (factory setting) |

Pirani range extension

The display and setpoint adjustment range can be extended (the setting only affects the control unit).

NOTE

Use the parameter Pirani range extension only with Pirani and Pirani / Capacitance gauges with display / measurement range up to 5×10^{-5} mbar

Available for the following gauges:

- Pirani (PVG)
- Pirani / Capacitance (PCG)
- Cold cathode (IMG)
- Cold cathode / Pirani (FRG-70x)
- Hot ionization / Pirani (FRG-720, FRG-730)
- Capacitance (CDG)

| | Value |
|----------------|---|
| RNG-EXT | |
| RNG-EXT | Deactivated (factory setting) |
| RNG-EXT | Display extended to 5×10^{-5} mbar |

Technical Information

Error relay

Switching behaviour of the error relay.

| | Value |
|------------------------|---|
| ERR-RELAY | |
| ERR-RELAY AL | Switches for all errors (factory setting) |
| ERR-RELAY no SE | Only unit errors |
| ERR-RELAY CH 1 | Error sensor 1 and unit error |

Technical Information

Bar graph

In the dot matrix a bar graph or the measured pressure as a function of time ($p = f(t)$) may be shown. During parameter setting the parameter and the parameter value may be displayed in place of this.

| | Value |
|-----------------------------|--|
| BARGRAPH | |
| BARGRAPH OFF | Factory setting. |
| BARGRAPH FSR | Bar graph covering full scale range |
| BARGRAPH FSR h | Bar graph covering full scale range, high-level presentation. |
| BARGRAPH FSR+SP | Bar graph covering full scale range and setpoint threshold. |
| BARGRAPH DEC | Bar graph covering a decade according to current measurement value. |
| BARGRAPH DEC H | Bar graph covering a decade according to current measurement value, high-level presentation. |
| BARGRAPH DEC + SP | Bar graph covering a decade according to current measurement value and setpoint threshold. |
| BARGRAPH f<(0.2s) | $p = f(t)$, autoscaled, 0.2 seconds / pixel For each measurement every 200 ms a measurement value is saved in tabular form and the last 100 measurement values (=100 pixel) are shown autoscaled. The represented data string corresponds to a logging duration of 20 seconds. |
| BARGRAPH f(1s) | $p = f(t)$, autoscaled, 1 second / pixel. For each measurement every second a measurement value is saved in tabular form and the last 100 measurement values (=100 pixel) are shown autoscaled. The represented data string corresponds to a logging duration of 100 seconds. |
| BARGRAPH f (6s) | $p = f(t)$, autoscaled, 6 seconds / pixel For each measurement every 6 seconds a measurement value is saved in tabular form and the last 100 measurement values (=100 pixel) are shown autoscaled. The represented data string corresponds to a logging duration of 10 minutes. |
| BARGRAPH f(1min) | $p = f(t)$, autoscaled, 1 minute / pixel For each measurement every minute a measurement value is saved in tabular form and the last 100 measurement values (=100 pixel) are shown autoscaled. The represented data string corresponds to a logging duration of 100 minutes. |

Technical Information

Backlight

| | Value |
|--|---|
| BACKLIGHT e.g.: BACKLIGHT 60% | Factory setting Adjustable from 0 ... 100% 100% = full brightness |

Screensaver

The screensaver reduces the brightness of the backlight or switches it OFF completely (dark room).

| | Value |
|--------------------------|---|
| SCREENSAVER | |
| SCREENSAVER OFF | factory setting |
| SCREENSAVER 10min | after 10 minutes |
| SCREENSAVER 30min | after 30 minutes |
| SCREENSAVER 1h | after 1 hour |
| SCREENSAVER 2h | after 2 hour |
| SCREENSAVER 8h | after 8 hour |
| SCREENSAVER DR | the backlight is switched off completely after 1 minute |

Technical Information

Contrast

| | Value |
|--|---|
| CONTRAST e.g.: CONTRAST 40% | Factory setting Adjustable from 0 ... 100% 100% = full contrast |



Default parameter settings

All user parameter settings are replaced by the default values (factory settings).

WARNING



Loading of the default parameter settings is irreversible.

| | Value |
|---|--|
| DEFAULT DEFAULT ▼+▲ 2s | Press   keys at the same time for >2 s to start loading default values |
| DEFAULT SET | The default values are loaded |

Language

Display language.

| | Value |
|--|---------------------------|
| LANGUAGE LANGUAGE ENGLISH | English (factory setting) |
| LANGUAGE GERMAN | German |
| LANGUAGE FRENCH | French |

Technical Information

Measurement value format

Measurement values in floating point or exponential format.
If a measurement value cannot reasonably be expressed in the floating point format, it is automatically displayed in the exponential format.

| | Value |
|----------------------|--|
| FORMAT | |
| FORMAT X.X | Floating point format, if possible (factory setting) |
| FORMAT X.XESY | Exponential format |

Display of measurement range end value

Display of underrange or overrange.



| | Value |
|----------------------|--|
| END VAL | |
| END VAL VR/OR | When an underrange or overrange occurs UR or OR is displayed (factory setting). |
| END VAL VALUE | When an underrange or overrange occurs the respective full scale value is displayed. |

Test Parameters

TEST > The Test parameter group is used for e.g. displaying the firmware version, entering and editing special parameter values, and for running test programs.

NOTE

The group is only available if

- The  key was pressed while the AGC-100 was turned ON, or
- The  key was pressed for 5 s while <..... is displayed.

Parameters in this group

| | |
|------------------|--------------------------------|
| SOFTWARE | Firmware version |
| HARDWARE | Hardware version |
| MAC | MAC address |
| RNHOURS | Operating hours |
| WATCHDOG | Watchdog control |
| TORR-LOCK | Torr lock |
| KEY-LOCK | Keylock |
| FLASH | FLASH test (program memory) |
| EEPROM | EEPROM test (parameter memory) |
| DISPLAY | Display test |
| I/O | I/O test |
| < | One level back |

The parameters in this group are available for all gauges.

Technical Information

Firmware version

The firmware version (program version) is displayed.

| | Value |
|----------------------------|---|
| e.g.: SOFTWARE 1.00 | This information is helpful when contacting Agilent Technologies. |

Hardware version

The hardware version is displayed.

| | Value |
|---------------------------|---|
| e.g.: HARDWARE 1.0 | This information is helpful when contacting Agilent Technologies. |

MAC address

The MAC address is displayed.

| | Value |
|-------------------------------|--|
| e.g.: MAC 00A0410A0008 | The address is displayed without any separators (e.g. 00-A0-41-0A-00-08) |

Operating hours

The operating hours are displayed.

| | Value |
|----------------------------|-----------------|
| e.g.: RUNHOURS 24 h | Operating hours |

Watchdog control

Behaviour of the system control (watchdog control) in the event of an error.

| | Setting |
|----------------------|---|
| WATCHDOG | |
| WATCHDOG AUTO | The system automatically acknowledges error messages of the watchdog after 2 s (factory setting). |
| WATCHDOG OFF | Error messages of the watchdog have to be acknowledged by the operator. |

Technical Information

Torr lock

The measurement units Torr and Micron can be suppressed in the corresponding parameter setting **UNIT TORR**.

| | Setting |
|----------------------|--|
| TORR-LOCK | |
| TORR-LOCK OFF | Measurement units Torr and Micron available (factory setting). |
| TORR-LOCK ON | Measurement units Torr and Micron not available. |



Keylock

The keylock function prevents inadvertent entries in the parameter mode and thus malfunctions.

| | Setting |
|--------------------|--|
| KEYLOCK | |
| KEYLOCK OFF | Keylock function disabled (factory setting). |
| KEYLOCK ON | Keylock function enabled. |

FLASH test



Test of the program memory.

| | Setting |
|--------------------|---|
| FLASH ▼+▲ | Press   keys at the same time to start test. |
| FLASH RUN | Test in progress (very briefly) |
| FLASH PASS | Test completed, no error found. After the test, an 8-digit checksum (e.g. FLASH 0x12345678) is displayed. |
| FLASH ERROR | Test completed, error found. After the test, an 8-digit checksum (e.g. FLASH 0x12345678) is displayed. If the error persists after repeating the test, please contact your nearest Agilent Vacuum service center. |

Technical Information



EEPROM test

Test of the program memory.

| | Test sequence |
|---------------------|--|
| EEPROM ▼+▲ | Press   keys at the same time to start test. |
| EEPROM RUN | Test in progress. |
| EEPROM PASS | Test completed, error found. |
| EEPROM ERROR | Test completed, error found. If the error persists after repeating the test, please contact your nearest Agilent Vacuum service center. |

Display test

Test of the display.

| | Test sequence |
|--------------------|--|
| DISPLAY ▼+▲ | Press   keys at the same time to start test. After starting the test, all display elements are lit at the same time for 10 s. |

Technical Information

I/O test

Test of the unit relays. The test program tests their switching function.

CAUTION



The relays switch irrespective of the pressure.

Starting a test program may cause unwanted effects in connected control systems.

Disconnect all sensor and control system lines to ensure that no control commands or messages are triggered by mistake.

The relays switch ON and OFF cyclically. The switching operations are indicated optically and are also clearly audible.

The switching function contacts are connected to the CONTROL connector on the rear of the unit. Check their function with an ohmmeter.

| | Test sequence |
|--------------|--|
| I/O ▼+▲ | Press   keys at the same time to start test. |
| I/O OFF | All relays deactivated |
| I/O REL1 ON | Switching function relay 1 |
| I/O REL1 OFF | Switching function relay 1 |
| I/O REL2 ON | Switching function relay 2 |

Technical Information

Data Logger Mode

DATA LOGGER ▼+▲

The data logger group is used for:

- recording measurement data on a USB memory stick (interface type A on the front of the Center unit).
- deleting recorded measurement data from the USB memory stick.

NOTE

This group is only available when a USB memory stick formatted for the FAT file system (FAT32) is plugged in. Use a max. 32 GB memory stick.

NOTE

Not all USB memory sticks are automatically recognized by the AGC-100, as they (in particular cheaper brands) do not always conform to USB standard requirements. Try a different memory stick before contacting your nearest Agilent Technologies service center.

Parameters in this group

| | |
|----------------------|--|
| DATE | Current date |
| TIME | Current time |
| INTERVAL | Display interval |
| DEC-SEPARATOR | Decimal separator |
| FILENAME | File name |
| START / STOP | Start / stop record |
| CLEAR | Deletion of files with displayed measurement data. |

Date

| | Value |
|---|---|
| DATE e.g.: DATE 2015-04-15 | Current date in the format YYYY-MM-DD e.g.: 2016-01-15 |

Technical Information

Time

| | Value |
|--|---|
| TIME e.g.: TIME 15:45 | Current time in the format hh:mm [24 h] e.g. 15:45 |

Interval

Data logging interval.

| | Value |
|----------------------|--|
| INTERVAL | |
| INTERVAL 1s | Recording interval 1/s |
| INTERVAL 10s | Recording interval 1/10 s |
| INTERVAL 30s | Recording interval 1/30 s |
| INTERVAL 1min | Recording interval 1/60 s |
| INTERVAL 1% | Recording interval: in the event of measurement value changes $\geq 1\%$ |
| INTERVAL 5% | Recording interval: in the event of measurement value changes $\geq 5\%$ |

Decimal separator

Decimal separator for measurement values in the measurement data file.

| | Value |
|----------------------|---------------|
| DEC-SEPARATOR | |
| DEC-SEPARATOR | Decimal comma |
| DEC-SEPARATOR | Decimal point |

Technical Information

File name

| | Value |
|--|--|
| FILENAME e.g.: FILENAME DATALOG | Name of the measurement data file, max. 7 digits File ending: CSV |

After entering the 7th digit the display stops flashing. The name of the data file is saved and the unit is in the read mode again.

NOTE



Is the file name shorter than 7 digits, a blank space must be set to each remaining digit

Start / Stop


Starting / stopping measurement value display.

NOTE

 flashes during measurement data display (in the measurement mode only).

| | Value |
|---|--|
| START START ▲ STOP ▼ | Press  key to start record: Data record is running, display has changed to STOP ▼ and the down arrow ▼ is blinking. Press  key to stop saving: Data record is stopped, display has changed to START ▲ and the up arrow ▲ is blinking. |



NOTE

The unit does not return automatically to the measurement mode, as long as the arrows ▼ or ▲ in the display are blinking.
Press the  key to leave the editing mode. Then, after approx. 10 s, the unit returns automatically to the measurement mode.

Technical Information

Deletion

Deletion of all measurement data files (ending CSV) from USB memory stick.

| | Value |
|----------------------|--|
| CLEAR ▼+▲ | Press   keys at the same time to delete files. |
| CLEAR RUNNING | CSV files are being deleted. |
| CLEAR DONE | CSV files have been deleted. |

Technical Information

Parameter Transfer Mode

| | | |
|--------------|---|---|
| SETUP | > | This group is used for: <ul style="list-style-type: none">• saving all parameters on a USB memory stick (interface type A on the front of the AGC-100)• loading all parameters from a USB memory stick onto the AGC-100• formatting a USB memory stick• deleting files with saved parameters from the USB memory stick |
|--------------|---|---|

NOTE

This group is only available when a USB memory stick formatted for the FAT file system (FAT32) is plugged in. Use a max. 32 GB memory stick.

Parameters in this group

| | |
|----------------|--|
| SAVE | Saving all parameters. |
| RESTORE | Loading all parameters onto the AGC-100. |
| FORMAT | Formatting USB memory stick (FAT32). |
| CLEAR | Deletion of files with saved parameters. |
| < | One level back. |

Technical Information

Saving a parameter

Saving all parameters of the AGC-100 to a USB memory stick (file ending: CSV).

| | Value |
|---------------------|---|
| SAVE | |
| SAVE SETUP | File name on the USB memory stick: SETUP01.CSV. |
| | |
| SAVE SETUP99 | File name on the USB memory stick: SETUP99.CSV. |
| SAVE RUNNING | CSV file is being saved. |
| SAVE DONE | Saving completed. |

Loading parameters



Loading all parameters from a USB memory stick onto the AGC-100.

| | Value |
|------------------------|---|
| RESTORE | |
| RESTORE SETUP01 | File name on the USB memory stick: SETUP.CSV. |
| | |
| RESTORE SETUP99 | File name on the USB memory stick: SETUP99.CSV. |
| RESTORE RUNNING | CSV file is being loaded. |
| RESTORE DONE | Loading completed. |
| RESTORE ERROR | Error occurred. |

Technical Information



Formatting

Formatting USB memory stick.

| | Value |
|-----------------------|---|
| FORMAT ▼+▲ | Press   keys at the same time to start formatting |
| FORMAT RUNNING | Formatting in progress. |
| FORMAT DONE | Formatting completed. |

Deleting

Deleting all parameter files (ending CSV) from the USB memory stick.

| | Value |
|----------------------|--|
| CLEAR ▼+▲ | Press   keys at the same time to delete files. |
| CLEAR RUNNING | CSV files are being deleted. |
| CLEAR DONE | CSV files have been deleted. |

Communication Protocol (Serial Interface)

The AGC-100 communicates with a computer via virtual serial interfaces (COM ports). Thus the user software can access the AGC-100 via USB Type B or via Ethernet interface.

Communication via USB Type B interface

The corresponding driver for the virtual COM port is installed automatically, when the AGC-100 is connected to a computer via the USB Type B interface. If the driver is not installed automatically, it can be downloaded from the FTDI website (www.ftdichip.com/Drivers/VCP.htm).

The installed virtual COM port appears as additional serial interface in the device manager of the computer.

Communication via Ethernet interface

With the Ethernet Configuration Tool a virtual serial interface (COM) can be assigned to an IP address. In addition, it allows configuration of the Ethernet interface via a computer.

The installed virtual COM port appears as additional serial interface in the device manager of the computer.

When the AGC-100 is put into operation, it starts transmitting measured values in intervals of 1 s. As soon as the first character is transferred to the AGC-100, the automatic transmission of measured values stops. After the necessary inquiries or parameter modifications have been made, the transmission of measured values can be started again with the COM command.

Technical Information

Data Transmission

The data transmission is bi-directional, i.e. data and control commands can be transmitted in either direction.

Data format

1 start bit, 8 data bits, no parity bit, 1 stop bit, no hardware handshake.

Definitions

The following abbreviations and symbols are used:

| Symbol | Meaning | | |
|--------|--|-----|-----|
| HOST | Computer or terminal | | |
| [...] | Optional elements | | |
| ASCII | American Standard Code for Information Interchange | | |
| | | Dez | Hez |
| <ETX> | END OF TEXT (CTRL C) Reset the interface | 3 | 03 |
| <CR> | CARRIAGE RETURN Go to beginning of line | 13 | 00 |
| <LF> | LINE FEED Advance by one line | 10 | 0A |
| <ENQ> | ENQUIRY (CTRL E) Request for data transmission | 5 | 05 |
| <ACK | ACKNOWLEDGE Positive report signal | 6 | 06 |
| <NAK> | NEGATIVE ACKNOWLEDGE Negative report signal | 21 | 15 |

"Transmit": Data transfer from HOST to AGC-100

"Receive": Data transfer from AGC-100 to HOST

Flow Control

After each ASCII string, the HOST must wait for a report signal (<ACK><CR><LF> or <NAK> <CR><LF>).

The input buffer of the HOST must have a capacity of at least 32 bytes.

Technical Information

Communication Protocol

Transmission format

Messages are transmitted to the AGC-100 as ASCII strings in the form of mnemonic operating codes and parameters. All mnemonics comprise three ASCII characters.

Spaces are ignored. <ETX> (CTRL C) clears the input buffer in the AGC-100.

Transmission protocol

| HOST | AGC-100 | Explanation |
|----------------------------|---------------|---|
| Mnemonics [and parameters] | -----> | Receives message with "end of message" |
| <CR>[<LF>] | -----> | |
| <----- | <ACK><CR><LF> | Positive acknowledgment of a received message |

Reception format

When requested with a mnemonic instruction, the AGC-100 transmits the measurement data or parameters as ASCII strings to the HOST.

<ENQ> (CTRL E) must be transmitted to request the transmission of an ASCII string. Additional strings, according to the last selected mnemonic, are read out by repetitive transmission of <ENQ>.

If <ENQ> is received without a valid request, the ERROR word is transmitted.

Reception protocol

| HOST | AGC-100 | Explanation |
|----------------------------|-------------------------------------|---|
| Mnemonics [and parameters] | -----> | Receives message with "end of message" |
| <CR>[<LF>] | -----> | |
| <----- | <ACK><CR><LF> | Positive acknowledgment of a received message |
| | : | |
| <ENQ> | -----> | Requests to transmit data |
| <----- | Measurement values or parameters | Transmits data with "end of message" |
| <----- | <CR><LF> | |

Technical Information

Error processing

The strings received are verified in the AGC-100. If an error is detected, a negative acknowledgment <NAK> is output.

Error recognition protocol

| HOST | AGC-100 | Explanation |
|-----------------------------------|---|--|
| Mnemonics [and parameters] -----> | | Receives message with "end of message" |
| <CR>[<LF>] -----> | | |
| | ***** Transmission or programming error ***** | |
| <-----<NAK><CR><LF> | | Negative acknowledgment of a received message. |
| Mnemonics [and parameters] -----> | | Receives message with "end of message". |
| <CR>[<LF>] -----> | | |
| <-----<ACK><CR><LF> | | Positive acknowledgment of a received message. |

Technical Information

Mnemonics

| | |
|------------|---------------------------------------|
| AYT | Are you there? |
| BAL | Backlight |
| BAU | Transmission rate (USB) |
| COM | Continuous mode of measurement values |
| COR | Calibration factor |
| DAT | Date |
| DCB | Display control bar graph |
| DCC | Display control contrast |
| DCD | Display resolution |
| DCS | Display control screensaver |
| DGS | Degas |
| ERA | Error relay allocation |
| ERR | Error status |
| ETH | Ethernet configuration |
| EUM | Emission user mode |
| EVA | Measurement range end value |
| FIL | Measurement value filter |
| FMT | Number format (measurement value) |
| FSR | Measurement range (linear gauges) |
| FUM | Filament user mode |
| GAS | Gas type correction |
| HDW | Hardware version |
| HVC | HV control, EMI on/off |
| ITR | Data output |
| LCM | Start / stop data logger |
| LNG | Language (display) |
| LOC | Keylock |
| MAC | Ethernet MAC address |
| OFS | Offset correction |
| PNR | Firmware version |
| PR1 | Measurement data |
| PRE | Pirani range extension |
| RES | Reset |
| RHR | Operating hours |

Technical Information

| | |
|------------|-------------------------------|
| SAV | Save parameters (EEPROM) |
| SC1 | Gauge control |
| SCM | Save / load parameters (USB) |
| SP1 | Switching function 1 |
| SP2 | Switching function 2 |
| SPS | Switching function status |
| TAD | A/D converter test |
| TAI | ID resistance test |
| TDI | Display test |
| TEE | EEPROM test |
| TEP | FLASH test |
| TID | Gauge identification |
| TIM | Time |
| TIO | I/O test |
| TKB | Operator key test |
| TLC | Torr lock |
| TMP | Inner temperature of the unit |
| TRS | Serial Interface test |
| UNI | Pressure unit |
| WDT | Watchdog control |

Technical Information

Measurement Mode

COM - Continuous output of measurement values

Transmit: **COM** [,a] <CR>[<LF>]

| Description | |
|-------------|--|
| a | Time interval, a = 0 -> 100 ms 1 -> 1 s (default) 2 -> 1 minute |

Receive: <ACK><CR><LF>

<ACK> is immediately followed by the continuous output of the measurement value in the desired interval.

Receive: b,sx.xxxxEsxx <CR><LF>

| Description | |
|-------------|---|
| b | Status, b = 0 -> Measurement data okay 1 -> Underrange 2 -> Overrange 3 -> Measurement value error (sensor error) 4 -> Sensor off 5 -> No sensor 6 -> Identification error 7 -> Error FRG |
| sx.xxxxEsxx | Measurement value 1) [in current pressure unit] (s = sign) |

NOTE

¹⁾ Values always in exponential format.
For logarithmic gauges, the 3rd and 4th decimal are always 0.

Technical Information

ERR - Error status

Transmit: **ERR** <CR>[<LF>] Error status

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: aaaa <CR><LF>

| Description | |
|-------------|---|
| aaaa | Error status, aaaa = 0000 -> No error 1000 -> ERROR (controller error (see display on front panel) 0100 -> NO HWR (no hardware) 0010 -> PAR (inadmissible parameter) 0001 -> SYN (Syntax error) |

NOTE

The ERROR word is cancelled when read out. If the error persists, it is immediately set again.

Technical Information

PR1 - Measurement data gauge

Transmit: **PR1** <CR>[<LF>]
Receive: <ACK><CR><LF>
Transmit: <ENQ>
Receive: a,sx.xxxxEsxx <CR><LF>

| Description | |
|--------------------|---|
| a | Status, a = 0 -> Measurement data okay 1 -> Underrange 2 -> Overrange 3 -> Sensor error 4 -> Sensor off 5 -> No sensor 6 -> Identification error 7 -> Error FRG |
| sx.xxxxEsxx | Measurement value ¹⁾ [in current pressure unit] (s = sign) |

NOTE

¹⁾ Values always in exponential format.
For logarithmic gauges, the 3rd and 4th decimal are always 0.

Technical Information

RES - Reset

Transmit: **RES** [,a] <CR>[<LF>]

| Description | |
|-------------|--|
| a | a = 1 -> Cancels currently active error and returns to measurement mode |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: b[,b][,b][...] <CR><LF>

| Description | |
|-------------|---|
| b | List of all present error messages, b = 0 -> No error 1 -> Watchdog has responded 2 -> Task fail error 3 -> FLASH error 4 -> RAM error 5 -> EEPROM error 6 -> DISPLAY error 7 -> A/D converter error 8 -> UART error 9 -> General error 10 -> ID error |

Technical Information

TID - Gauge identification

Transmit: **TID** <CR>[<LF>] Gauge identification

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| | Description |
|----------|---|
| a | Identification gauge 1, a = PVG5xx (Pirani Gauge) PCG75x (Pirani / Capacitance Gauge) IMG500 (Cold Cathode Gauge) FRG70x (Cold Cathode / Pirani Gauge) CDG500 (Capacitance Gauge) FRG720 (Hot Ionization / Pirani Gauge) FRG730 (Hot Ionization / Pirani Gauge) noSEn (No sensor) noid (No identifier) |

Switching Function Parameters

SPS - Switching function status

Transmit: **SPS** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a,b** <CR><LF>

| | Description |
|----------|---|
| a | Status switching function 1, a = 0 -> OFF 1 -> ON |
| b | Status switching function 2 |

Technical Information

SP1, SP2 - Switching function 1 and 2

Transmit: **SPx [a,x.xxxxEsxx,y.yyyyEsyy] <CR><LF>**

| | Description |
|-------------------|---|
| x | Switching function, x = 1 -> Switching function 1 2 -> Switching function 2 |
| a | Switching function assignment, a = 0 -> Turned off 1 -> Turned on 2 -> Measurement channel 1 |
| x.xxxxEsxx | Lower threshold 1) [in current pressure unit] (default = depending on gauge) (s = sign) |
| y.yyyyEsyy | Upper threshold 1) [in current pressure unit] (default = depending on gauge) (s = sign) |

NOTE

¹⁾ Values can be entered in any format.
They are internally converted into the floating point format.

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a,x.xxxxEsxx,y.yyyyEsyy <CR><LF>**

| | Description |
|-------------------|---|
| a | Switching function assignment |
| x.xxxxEsxx | Lower threshold [in current pressure unit] (s = sign) |
| y.yyyyEsyy | Upper threshold [in current pressure unit] (s = sign) |

Technical Information

Gauge Parameters

COR - Calibration factor

Transmit: **COR** [,a.aaa] <CR>[<LF>]

| Description | |
|--------------|--|
| a.aaa | Calibration factor, 0.100 ... 10.000 (default = 1.000) |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a.aaa,b.bbb,c.ccc <CR><LF>

| Description | |
|--------------|--------------------|
| a.aaa | Calibration factor |

Technical Information

DCD - Display resolution

Transmit: **DCD** [**a**] <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a <CR><LF>

| Description | |
|-------------|---|
| a | Resolution a = 0 -> AUTO (default) 1 -> One digit 2 -> Two digits 3 -> Three digits 4 -> Four digits |

When the PrE is ON and the pressure is in the range $p < 1.0E^{-4}$ mbar the display resolution of the PCG75x gauges is reduced by one decimal digit.

DGS - Degas

Transmit: **DGS** [**a**] <CR>[<LF>]

| Description | |
|-------------|---|
| a | Degas, a = 0 -> Degas off (default) 1 -> Degas on (3 minutes) |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a <CR><LF>

| Description | |
|-------------|--------------|
| a | Degas status |

Technical Information

EUM - Emission user mode

Transmit: **EUM** [,a] <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a <CR><LF>

| Description | |
|-------------|--|
| a | Emission, a = 0 -> Manually 1 -> Automatic (default) |

FIL - Measurement value filter

Transmit: **FIL** [,a] <CR>[<LF>]

| Description | |
|-------------|---|
| a | Filter, a = 0 -> Filter off 1 -> Fast 2 -> Normal 3 -> Slow |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a <CR><LF>

| Description | |
|-------------|----------------------|
| a | Filter time constant |

Technical Information

FUM - Filament user mode FRG730

Transmit: **FUM [a]** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a <CR><LF>

| Description | |
|-------------|---|
| a | Filament, a = 0 -> Automatic (default) 1 -> Filament 1 2 -> Filament 2 |

Technical Information

FSR - Measurement range (linear gauges)

NOTE

The full scale value of the measurement range (Full Scale) of linear analog gauges has to be defined by the user. The full scale value of linear digital gauges and logarithmic gauges is automatically recognized.

Transmit: **FSR [a] <CR>[<LF>]**

| | Description |
|----------|-----------------------|
| a | Full scale value, a = |
| | 0 -> 0.01 mbar |
| | 1 -> 0.01 Torr |
| | 2 -> 0.02 mbar |
| | 3 -> 0.02 Torr |
| | 4 -> 0.05 mbar |
| | 5 -> 0.05 Torr |
| | 6 -> 0.10 mbar |
| | 7 -> 0.10 Torr |
| | 8 -> 0.25 mbar |
| | 9 -> 0.25 Torr |
| | 10 -> 0.50 mbar |
| | 11 -> 0.50 Torr |
| | 12 -> 1 mbar |
| | 13 -> 1 Torr |
| | 14 -> 2 mbar |
| | 15 -> 2 Torr |
| | 16 -> 5 mbar |
| | 17 -> 5 Torr |
| | 18 -> 10 mbar |
| | 19 -> 10 Torr |
| | 20 -> 20 mbar |
| | 21 -> 20 Torr |
| | 22 -> 50 mbar |
| | 23 -> 50 Torr |
| | 24 -> 100 Torr |
| | 25 -> 100 mbar |
| | 26 -> 200 mbar |
| | 27 -> 200 Torr |
| | 28 -> 500 mbar |
| | 29 -> 500 Torr |
| | 30 -> 1000 mbar |
| | 31 -> 1100 mbar |
| | 32 -> 1000 Torr |
| | 33 -> 2 bar |
| | 34 -> 5 bar |
| | 35 -> 10 bar |
| | 36 -> 50 bar |

Technical Information

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a <CR><LF>

| Description | |
|-------------|------------------|
| a | Full scale value |

GAS - Gas type correction

Transmit: **GAS** [a] <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a <CR><LF>

| Description | |
|-------------|--|
| a | Gas type correction, a = 0 -> nitrogen / air (default) 1 -> Argon 2 -> Hydrogen 3 -> Helium 4 -> Neon 5 -> Krypton 6 -> Xenon 7 -> Other gases |

HVC - HV control, EMI on / off

Transmit: **HVC** [a] <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a <CR><LF>

| Description | |
|-------------|----------------------------------|
| a | Mode, a = 0 -> OFF 1 -> ON |

Technical Information

ITR - Data output FRG-720, FRG-730, CDG

Transmit: **ITR** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **aa,aa,aa,aa,aa,aa,aa,aa** <CR><LF>

| | Description |
|--------------------------------|---|
| aa,aa,aa,aa,aa,aa,aa,aa | Data string (byte 0 ... 7 in hex format) |

Technical Information

OFS - Offset correction (linear gauges)

Transmit: **OFS** [**a,sx.xxxxEsxx**] <CR><LF>

| | Description |
|--------------------|--|
| a | Mode, a = 0 -> OFF (default) No offset value needs to be entered 1 -> ON If no offset value has been entered, the pre-viously defined offset value is taken over 2 -> Auto (offset measurement) No offset value needs to be entered 3 -> Zero adjustment CDG No offset value needs to be entered |
| sx.xxxxEsxx | Offset ¹⁾ , [in current pressure unit] (default = 0.0000E+00) s = sign |

NOTE

¹⁾ Values can be entered in any format. They are internally converted into the floating point format.

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a,sx.xxxxEsxx <CR><LF>

| | Description |
|--------------------|---|
| a | Mode |
| sx.xxxxEsxx | Offset ¹⁾ , [in current pressure unit] s = sign |

Technical Information

Gauge Control

SC1 - Gauge control

Transmit: **SC1 [a,b,c.ccEscc,d.ddEsdd] <CR>[<LF>]**

| Description | |
|-----------------|---|
| a | Gauge activation, a = 0 -> Manual (default) 1 -> Hot start 3 -> Via measurement channel 1 |
| b | Gauge deactivation, b = 0 -> Manual (default) 1 -> Self control 3 -> Via measurement channel 1 |
| c.ccEscc | ON threshold (s = sign) |
| d.ddEsdd | OFF threshold (s = sign) |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a,b,c.ccEscc,d.ddEsdd <CR><LF>**

| Description | |
|-----------------|--------------------------|
| a | Gauge activation |
| b | Gauge deactivation |
| c.ccEscc | ON threshold (s = sign) |
| d.ddEsdd | OFF threshold (s = sign) |

Technical Information

General Parameters

BAL- Backlight

Transmit: **BAL** [,a] <CR>[<LF>]

| Description | |
|-------------|--|
| a | Backlight in percent, a = 0 ... 100 100% is full brightness |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| Description | |
|-------------|-----------|
| a | Backlight |

BAU - Transmission rate (USB)

Transmit: **BAU** [,a] <CR>[<LF>]

| Description | |
|-------------|---|
| a | Transmission rate, a = 0 -> 9600 Baud 1 -> 19200 Baud 2 -> 38400 Baud 3 -> 57600 Baud 4 -> 115200 Baud (default) |

NOTE

As soon as the new baud rate has been entered, the report signal is transmitted at the new transmission rate.

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: x <CR><LF>

| Description | |
|-------------|------------|
| a | x <CR><LF> |

Technical Information

DCB - Display control bar graph

Transmit: **DCB** [,a] <CR>[<LF>]

| Description | |
|-------------|---|
| a | Bar graph display, a = 0 -> OFF (default) 1 -> Bar graph covering full scale range 2 -> Bar graph covering full scale range, high-level presentation 3 -> Bar graph covering full scale range and setpoint threshold 4 -> Bar graph covering a decade according to current measurement value 5 -> Bar graph covering a decade according to current measurement value, high-level presentation 6 -> Bar graph covering a decade according to current measurement value and setpoint threshold 7 -> $p = f(t)$, autoscaled, 0.2 seconds / pixel For each measurement every 200 ms a measurement value is saved in tabular form and the last 100 measurement values (=100 pixel) are shown autoscaled. The represented data string corresponds to a logging duration of 20 seconds. 8 -> $p = f(t)$, autoscaled, 1 second / pixel For each measurement every second a measurement value is saved in tabular form and the last 100 measurement values (=100 pixel) are shown autoscaled. The represented data string corresponds to a logging duration of 100 seconds. 9 -> $p = f(t)$, autoscaled, 6 seconds / pixel For each measurement every 6 seconds a measurement value is saved in tabular form and the last 100 measurement values (=100 pixel) are shown autoscaled. The represented data string corresponds to a logging duration of 10 minutes. 10 -> $p = f(t)$, autoscaled, 1 minute / pixel For each measurement every minute a measurement value is saved in tabular form and the last 100 measurement values (=100 pixel) are shown autoscaled. The represented data string corresponds to a logging duration of 100 minutes. |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| Description | |
|-------------|-------------------|
| a | Bar graph display |

Technical Information

DCC- Display control contrast

Transmit: **DCC** [,a] <CR>[<LF>]

| Description | |
|-------------|--|
| a | Contrast in percent, a = 0 ... 100 100% = full contrast |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| Description | |
|-------------|----------|
| a | Contrast |

DCS - Display control screensaver

Transmit: **DCS** [,a] <CR>[<LF>]

| Description | |
|-------------|---|
| a | Screensaver, a = 0 -> Off (default) 1 -> After 10 minutes 2 -> After 30 minutes 3 -> After 1 hour 4 -> After 2 hours 5 -> After 8 hours 6 -> The backlight is switched off completely after 1 minute |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| Description | |
|-------------|-------------|
| a | Screensaver |

Technical Information

ERA - Error relay allocation

Transmit: **ERA [,a]** <CR>[<LF>]

| Description | |
|-------------|---|
| a | Switching behaviour error relay, a = 0 -> Switches for all errors (default) 1 -> Only unit errors 2 -> Error sensor and unit error |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| Description | |
|-------------|---------------------------------|
| a | Switching behaviour error relay |

EVA - Measurement range end value

Transmit: **EVA [,a]** <CR>[<LF>]

| Description | |
|-------------|---|
| a | Measurement range end value, a = 0 -> UR or OR is displayed (default) when an underrange or overrange occurs 1 -> The measurement range end value is displayed when an underrange or overrange occurs |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| Description | |
|-------------|-----------------------------|
| a | Measurement range end value |

Technical Information

FMT - Number format (measurement value)

Transmit: **FMT** [,a] <CR>[<LF>]

| Description | |
|-------------|--|
| a | Number format (measurement value), a = 0 -> Floating point format, if possible (default) 1 -> Exponential format |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| Description | |
|-------------|---------------|
| a | Number format |

LNG - Language (display)

Transmit: **LNG** [,a] <CR>[<LF>]

| Description | |
|-------------|---|
| a | Language, a = 0 -> English (default) 1 -> German 2 -> French |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| Description | |
|-------------|----------|
| a | Language |

Technical Information

PRE - Pirani range extension

Transmit: **PRE** [**a**] <CR>[<LF>]

| Description | |
|-------------|--|
| a | Pirani range extension, a = 0 -> Disabled (default) 1 -> Enabled |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| Description | |
|-------------|------------------------|
| a | Pirani range extension |

NOTE

PCG-75x gauges only, measurement range up to 5×10^{-5} mbar

SAV - Save parameters (EEPROM)

Transmit: **SAV** [**a**] <CR>[<LF>]

| Description | |
|-------------|---|
| a | Save parameters to EEPROM, a = 0 -> Save default parameters (default) 1 -> Save user parameters |

Receive: <ACK><CR><LF>

Technical Information

UNI - Pressure unit

Transmit: **UNI [a]** <CR>[<LF>]

| | Description |
|---|---|
| a | Pressure unit, a = 0 -> mbar/bar 1 -> Torr 2 -> Pascal 3 -> Micron 4 -> hPascal (default) 5 -> Volt |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| | Description |
|---|---------------|
| a | Pressure unit |

Technical Information

Data Logger Parameters

NOTE

The group is only available when a USB memory stick formatted for the FAT file system (FAT32) is plugged in. Use a max. 32 GB memory stick.

DAT - Date

Transmit: **DAT** [,**yyyy-mm-dd**] <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a <CR><LF>

| | Description |
|-------------------|---------------------------------------|
| yyyy-mm-dd | Current date in the format yyyy-mm-dd |

Technical Information

LCM - Start / stop data logger

Transmit: **LCM** [**a,b,c,ddddddd**] <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a,b,c,ddddddd <CR><LF>

| Description | |
|----------------|---|
| a | Data logger command, a = 0 -> Stop / data logging stopped 1 -> Start / data logging started 2 -> Clear / deletion of measurement data file (ending CSV) from USB memory stick |
| b | Data logging interval, b = 0 -> Logging interval 1/s 1 -> Logging interval 1/10 s 2 -> Logging interval 1/30 s 3 -> Logging interval 1/60 s 4 -> Logging interval in the event of measurement value changes $\geq 1\%$ 5 -> Logging interval in the event of measurement value changes $\geq 5\%$ |
| c | Decimal separator, c = 0 -> , (decimal comma) 1 -> . (decimal point) |
| ddddddd | File name (max. 7 digits) |

TIM - Time

Transmit: **TIM** [**hh:mm**] <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: hh:mm <CR><LF>

| Description | |
|--------------|---|
| hh:mm | Current time in the format hh:mm [24 h] |

Technical Information

Parameter Transfer

NOTE

The group is only available when a USB memory stick formatted for the FAT file system (FAT32) is plugged in. Use a max. 32 GB memory stick.

SCM - Save / load parameters (USB)

Transmit: **SCM** [**a,bb**] <CR><LF>

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: a <CR><LF>

| | Description |
|----------|--|
| a | Setup parameters, a = 0 -> Saving completed (read only) 1 -> CSV file is being saved (read only) 2 -> Loading all parameters from the USB memory stick onto the AGC-100 3 -> Formatting USB memory stick (FAT32) 4 -> Deleting parameter files (ending CSV) from the USB memory stick |
| b | Number in the file name (0 ... 99) |

Technical Information

Test Parameters (for service personnel)

HDW - Hardware version

Transmit: **HDW** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a.a** <CR><LF>

| Description | |
|-------------|----------------------------|
| a.a | Hardware version, e.g. 1.0 |

LOC - Keylock

Transmit: **LOC [a]** <CR>[<LF>]

| Description | |
|-------------|---|
| a | Keylock, a = 0 -> Off (default) 1 -> On |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| Description | |
|-------------|----------------|
| a | Keylock status |

Technical Information

MAC - Ethernet MAC address

Transmit: **MAC** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **aa-aa-aa-aa-aa-aa** <CR><LF>

| | Description |
|--------------------------|--|
| aa-aa-aa-aa-aa-aa | Ethernet MAC address of the unit: 00-A0-41-0A-00-00 ... 00-A0-41-0B-FF-FF |

PNR - Firmware version

Transmit: **PNR** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a.aa** <CR><LF>

| | Description |
|-------------|-----------------------------|
| a.aa | Firmware version, e.g. 1.00 |

RHR - Operating hours

Transmit: **RHR** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| | Description |
|----------|--|
| a | Run (operating) hours, e.g. 24 [hours] |

Technical Information

TAD - A/D converter test

Transmit: **TAD** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **aa.aaaa** <CR><LF>

| Description | |
|----------------|--|
| aa.aaaa | A/D converter Measurement signal [0.0000 ... 11.0000 V] |

TAI - ID resistance test

Transmit: **TAI** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **aa.aaaa** <CR><LF>

| Description | |
|----------------|-----------------------|
| aa.aaaa | Identification [kOhm] |

TDI - Display test

Transmit: **TDI** [,a] <CR>[<LF>]

| Description | |
|-------------|--|
| a | Display test, a = 0 -> Stops the test - display according to current operating mode (default) 1 -> Starts the test - all segments on |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **x** <CR><LF>

| Description | |
|-------------|---------------------|
| x | Display test status |

Technical Information

TEE - EEPROM test

Test of the parameter memory.

Transmit: **TEE** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

NOTE

Do not keep repeating the test (EEPROM life).

Receive: **aaaa** <CR><LF>

| Description | |
|-------------|------------|
| aaaa | Error word |

TEP- FLASH test

Test of the program memory.

Transmit: **TEP** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ> Starts the test (very brief)

Receive: **aaaa,bbbbbbbb** <CR><LF>

| Description | |
|-----------------|-----------------|
| aaaa | Error word |
| bbbbbbbb | Check sum (hex) |

Technical Information

TIO - I/O test

CAUTION

The relays switch irrespective of the pressure. Starting a test program may cause unwanted effects in connected control systems. Disconnect the sensor cable and control system lines to ensure that no control commands or messages are triggered by mistake

Transmit: **TIO** [**a,b**] <CR>[<LF>

| | Description |
|----------|---|
| a | Test status, a = 0 -> OFF 1 -> ON |
| b | Relay status (in hex format), bb = 00 -> All relays deactivated 01 -> Switching function relay 1 activated 02 -> Switching function relay 2 activated 40 -> Error relay activated 4F -> All relays activated |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a,b** <CR><LF>

| | Description |
|----------|-----------------|
| a | I/O test status |
| b | Relay status |

Technical Information

TKB - Operator key test

Transmit: **TKB** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **abcd** <CR><LF>

| Description | |
|-------------|--|
| a | Key 1, a = 0 -> Not pushed 1 -> Pushed |
| b | Key 2, b = 0 -> Not pushed 1 -> Pushed |
| c | Key 3, c = 0 -> Not pushed 1 -> Pushed |
| d | Key 4, d = 0 -> Not pushed 1 -> Pushed |

TLC - Torr lock

Transmit: **TLC [a]** <CR>[<LF>]

| Description | |
|-------------|---|
| a | Torr lock, a = 0 -> OFF (default) 1 -> ON |

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| Description | |
|-------------|------------------|
| a | Torr lock status |

Technical Information

TMP - Inner Temperature of the Unit

Transmit: **TMP** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **aa** <CR><LF>

| Description | |
|-------------|--------------------------------|
| aa | Temperature (± 2 °C) [°C] |

TRS - Serial Interface test

Transmit: **TRS** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ> Starts the test (repeats each character, test is interrupted with <CTRL> C).

WDT - Watchdog control

Transmit: **WDT** [,a] <CR>[<LF>]

| Description | |
|-------------|--|
| a | Watchdog control, a = 0 -> Manual error acknowledgement 1 -> Automatic error acknowledgement ¹⁾ (default) |

NOTE

¹⁾ If the watchdog has responded, the error is automatically acknowledged and cancelled after 2 s.

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a** <CR><LF>

| Description | |
|-------------|------------------|
| a | Watchdog control |

Technical Information

Further

AYT - Are you there?

Transmit: **AYT** <CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a,b,c,d,e** <CR><LF>

| | Description |
|----------|---|
| a | Type of the unit, e.g. AGC-100 |
| b | Model No. of the unit, e.g. AGC100 |
| c | Serial No. of the unit, e.g. L11605F001 |
| d | Firmware version of the unit, e.g. 1.00 |
| e | Hardware version of the unit, e.g. 1.0 |

ETH - Ethernet configuration

Transmit: **ETH** [a,bbb.bbb.bbb.bbb,ccc.ccc.ccc.ccc,ddd.ddd.ddd.ddd]
<CR>[<LF>]

Receive: <ACK><CR><LF>

Transmit: <ENQ>

Receive: **a,bbb.bbb.bbb.bbb,ccc.ccc.ccc.ccc,ddd.ddd.ddd.ddd** <CR><LF>

| | Description |
|------------------------|--|
| a | DHCP (dynamic host configuration protocol), a = 0 -> Statically 1 -> Dynamically |
| bbb.bbb.bbb.bbb | IP address |
| ccc.ccc.ccc.ccc | Subnet address |
| ddd.ddd.ddd.ddd | Gateway address |

Technical Information

Example

NOTE

"Transmit (T)" and "Receive (R)" are related to host.

| | |
|--|--|
| T: TID <CR> [<LF>] | Request for gauge identification |
| R: <ACK> <CR> <LF> | Positive acknowledgement Request for data |
| T: <ENQ> | transmission |
| R: PVG <CR> <LF> | Gauge identification |
| T: SP1 <CR> [<LF>] | Request for parameters of switching function 1 (setpoint 1) |
| R: <ACK> <CR> <LF> | Positive acknowledgement |
| T: <ENQ> | Request for data transmission |
| R: 1,1.0000E-09,9.0000E-07 <CR> <LF> | Thresholds |
| T: SP1 ,1,6.80E-3,9.80E-3 <CR> [<LF>] | Modification of parameters of switching function 1 (setpoint 1) |
| R: <ACK> <CR> <LF> | Positive acknowledgement |
| T: FOL ,2 <CR> [<LF>] | Modification of filter time constant (syntax error) |
| R: <NAK> <CR> <LF> | Negative acknowledgement |
| T: <ENQ> | Request for data transmission |
| R: 0001 <CR> <LF> | ERROR word |
| T: FIL ,2 <CR> [<LF>] | Modification of filter time constant |
| R: <ACK> <CR> <LF> | Positive acknowledgement |
| T: <ENQ> | Request for data transmission |
| R: 2 <CR> <LF> | Filter time constants |
| T: PR1 <CR> [<LF>] | Request for measurement data |
| R: <ACK> <CR> <LF> | Positive acknowledgement |
| T: <ENQ> | Request for data transmission |
| R: 0,8.3400E-03 <CR> <LF> | Status and pressure |
| T: <ENQ> | Request for data transmission |
| R: 1,8.0000E-04 <CR> <LF> | Status and pressure |

Maintenance

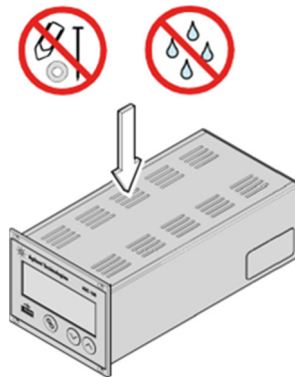
Cleaning

For cleaning the outside of the unit a slightly moist cloth will usually do. Do not use any aggressive or scouring cleaning agents.

WARNING

Mains voltage

Contact with live parts is extremely hazardous when liquids penetrate into the unit. Make sure no liquids penetrate into the equipment.



Battery replacement





The product contains a battery (type CR2032, service life >10 years) in order to maintain the data integrity of the real-time clock. Battery replacement is necessary if the real-time clock repeatedly shows an incorrect date. Please contact your local Agilent Technologies service center.

Troubleshooting

Signalization of errors

The error is shown in the dot matrix and the error relay opens.

Error messages

| | |
|-----------------------|--|
| SENSOR ERROR | Interruption or instability in sensor line or connector (Sensor error). Acknowledge with the  key. |
| WATCHDOG ERROR | The AGC-100 has been turned on too fast after power off. Acknowledge with the  key. If the watchdog is set to Auto, the AGC-100 acknowledges the message automatically after 2 s. The watchdog has tripped because of a severe electric disturbance or an operating system error. Acknowledge with the  key. If the watchdog is set to WATCHDOG AUTO ... the AGC-100 acknowledges the message automatically after 2 s. |
| DATA CORRUPTED | Parameter memory error (EEPROM). Acknowledge with the  key. |

If the problem persists after the message has been acknowledged several times and/or the gauge has been exchanged, please contact your nearest Agilent Technologies service center.

Repair

Return defective products to your nearest Agilent Technologies service center for repair.

Agilent Technologies assumes no liability and the warranty is rendered null and void if repair work is carried out by the end-user or by third parties.

Accessories and Spare Parts

When ordering spare parts, always mention:

- all information on the product nameplate
- description and ordering number.

Table 2 Accessories and Spare Parts for AGC-100

| Description | Ordering number |
|--|-----------------|
| Adapter panel for installation into a 19" rack chassis adapter, height 3 U | AGC100ADPT |

Appendix

Conversion Tables

Weights

| | kg | lb | slug | oz |
|------|-------------------------|-----------------------|-------------------------|---------|
| kg | 1 | 2.205 | 68.522×10^{-3} | 35.274 |
| lb | 0.454 | 1 | 31.081×10^{-3} | 16 |
| slug | 14.594 | 32.174 | 1 | 514.785 |
| oz | 28.349×10^{-3} | 62.5×10^{-3} | 1.943×10^{-3} | 1 |

Pressures

| | N/m ² , Pa | Bar | mBar, hPa | Torr | at |
|-----------------------|-----------------------|------------------------|---------------------|--------------------------|------------------------|
| N/m ² , Pa | 1 | 10×10^{-6} | 10×10^{-6} | 7.5×10^{-3} | 9.869×10^{-6} |
| Bar | 100×10^3 | 1 | 10^3 | 750.062 | 0.987 |
| mBar, hPa | 100 | 10 | 1 | 750.062×10^{-3} | 0.987×10^{-3} |
| Torr | 133.322 | 1.333×10^{-3} | 1.333 | 1 | 1.316×10^{-3} |
| at | 101.325×10^3 | 1.013 | 1.013×10^3 | 760 | 1 |

Pressure units used in the vacuum technology

| | mBar | Bar | Pa | hPa | kPa | Torr mm HG |
|------------|-----------------|--------------------|-----------------|-----------------|--------------------|----------------------|
| mBar | 1 | 1×10^{-3} | 100 | 1 | 0.1 | 0.75 |
| Bar | 1×10^3 | 1 | 1×10^5 | 1×10^3 | 100 | 750 |
| Pa | 0.01 | 1×10^{-8} | 1 | 0.01 | 1×10^{-3} | 7.5×10^{-3} |
| hPa | 1 | 1×10^{-3} | 100 | 1 | 0.1 | 0.75 |
| kPa | 10 | 0.01 | 1×10^3 | 10 | 1 | 7.5 |
| Torr mm HG | | | | | | |

1 Pa = 1 N/m²

Technical Information

Linear measurements

| | mm | m | inch | ft |
|------|--------|-----------------------|------------------------|------------------------|
| mm | 1 | 10^{-3} | 39.37×10^{-3} | 3.281×10^{-3} |
| mr | 10^3 | 1 | 39.37 | 3.281 |
| inch | 25.4 | 25.4×10^{-3} | 1 | 8.333×10^{-2} |
| ft | 304.8 | 0.305 | 1 | 1 |

Temperature

| | Kelvin | Celsius | Fahrenheit |
|------------|--------------------------------|--|--|
| Kelvin | 1 | $^{\circ}\text{C} + 273.15$ | $(^{\circ}\text{F} + 459.67) \times 5/9$ |
| Celsius | $\text{K} - 273.15$ | 1 | $5/9 \times ^{\circ}\text{F} - 17.778$ |
| Fahrenheit | $9/5 \times \text{K} - 459.67$ | $9/5 \times (^{\circ}\text{C} + 17.778)$ | 1 |

Technical Information

Firmware Update

If your AGC-100 firmware needs updating, e.g. for implementing a new gauge type, please contact your nearest Agilent Technologies service center.

A firmware update is possible:

- via a USB memory stick (type A connector on the front of the unit), or
- with the USB Update Tool via the USB type B connector on the rear of the unit.

User Parameters

Most of the settings you may have made in the Parameter mode will not be affected by a firmware update. However, we recommend that you save the parameters before an update.

Firmware update with a USB memory stick (type A)

NOTE

Not all USB memory sticks are automatically recognized by the AGC-100, as they (particularly cheaper brands) do not always conform to USB standard specifications. Try a different memory stick before contacting your nearest Agilent Technologies service center.

- 1 Download two files with the ending ".S19" and ".CNF" from our website "www.agilent.com" to a USB memory stick.
- 2 Switch OFF the unit.
- 3 Plug in the memory stick and then turn ON the unit.
- 4 The update occurs automatically in the following steps:

| | |
|------------------------|--|
| BOOTING | Very brief. |
| BOOTLOADER V1.x | Very brief. |
| ERASING FW... | Old firmware is being deleted from the unit. |
| UPDATING FW... | New firmware is being loaded onto the unit. |
| UPDATE COMPLETE | Update completed. |

- 5 Remove the memory stick and the unit will restart automatically.
- 6 If necessary, customer-specific settings saved before the update may now be resaved to the unit.

Technical Information

Firmware update with USB Update Tool (USB type B)

Precondition: Microsoft Windows XP, 7, 8 or 10 operating system.

NOTE

Your operating system should be updated first. Additionally administrator rights are required.

NOTE

During firmware update, no USB memory stick should be connected on the front of the unit.

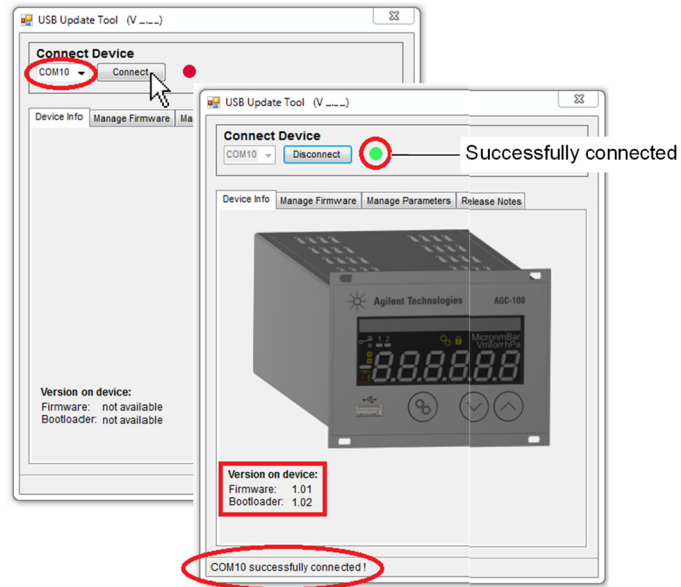
NOTE

If a virtual serial interface (COM) is not automatically established, you may download and then install the driver from the website "www.ftdichip.com/drivers/vcp.htm".

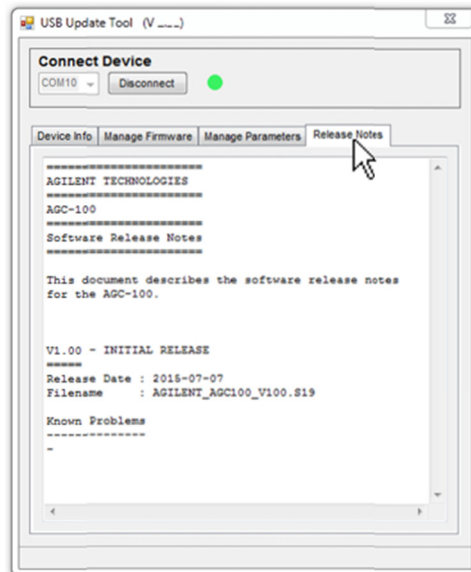
- 1 Download the USB UpdateTool from the CD ROM or from our website "www.agilent.com".
- 2 Using a USB cable type A/B connect the unit to the computer.

Technical Information

- 3 Start USB UpdateTool, select the on <Connect>.

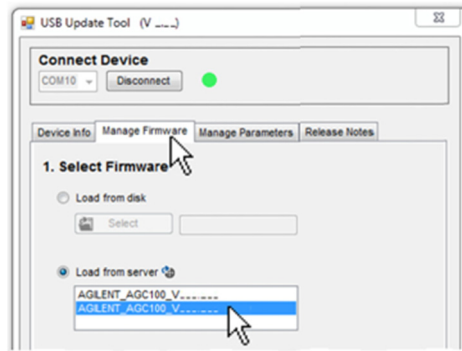


- 4 Click on <Release Notes> to view the software release notes.

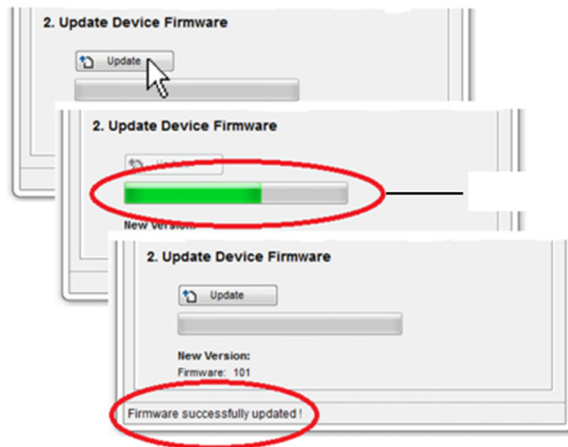


Technical Information

- 5 Click on <Manage Firmwar >, select firmware ...
 - Option <L ad from disk : Download a copy of the firmware from our website "www.agilent.com". Then, select the appropriate folder.
 - Option <L ad from server>: The update tool connects to the internet. Select the desired firmware version from the select on list.



... and click <Update>: The firmware is updated.



If the update as not successful, try again.



Technical Information

Ethernet Configuration

The user program (e.g. terminal program, LabView, etc.) must support serial interfaces. Under Microsoft Windows operating systems the AGC-100 is listed as a virtual COM interface.

NOTE

Please contact your network administrator, before starting Ethernet configuration.

NOTE

Your operating system should be updated first. Additionally administrator rights are required.

Connect the AGC-100 to a Network

With registration

- 1 Readout the MAC address of the AGC-100.
- 2 The AGC-100 should be registered in the network by the network administrator. After registration ask him for the Ethernet parameters (IP ADDRESS, GATEWAY, NETMASK and DHCP).
- 3 Configuring the AGC-100:
 - Save all AGC-100 parameters on a USB memory stick ("SAVE SETUP").
 - Set the Ethernet parameters (IP ADDRESS, GATEWAY, NETMASK and DHCP) in the saved CSV file on the memory stick.
 - Load the modified parameters onto the AGC-100 ("RESTORE SETUP").
 - Connect the AGC-100 with an Ethernet patch cable to the network.
- 4 Search for the AGC-100 in the network using the Ethernet Configuration Tool and assign it to a virtual COM interface.
- 5 Start the program for communication with the AGC-100 and connect it to the assigned COM interface.

Technical Information

Without registration

- 1** If unknown, ask the network administrator for the Ethernet parameters (IP ADDRESS, GATEWAY, NETMASK and DHCP).
- 2** Configuring the AGC-100:
 - Save all AGC-100 parameters on a USB memory stick ("SAVE SETUP").
 - Set the Ethernet parameters (IP ADDRESS, GATEWAY, NETMASK and DHCP) in the saved CSV file on the memory stick.
 - Load the modified parameters onto the AGC-100 ("RESTORE SETUP").
 - Connect the AGC-100 with an Ethernet patch cable to the network.
- 3** Search for the AGC-100 in the network using the Ethernet Configuration Tool and assign it to a virtual COM interface.
- 4** Start the program for communication with the AGC-100 and connect it to the assigned COM interface.

Connect the AGC-100 to a Computer

Computer with DHCP server

- 1** Connect the AGC-100 to a computer:
 - with a crossover Ethernet cable
 - via a switch, or
 - with an Ethernet patch cable (precondition: the interface is auto MDI-X capable).
- 2** The DHCP server assigns automatically an IP address.
Precondition: DHCP = ON (standard).
- 3** Search for the AGC-100 in the network using the Ethernet Configuration Tool and assign it to a virtual COM interface.
- 4** Start the program for communication with the AGC-100 and connect it to the assigned COM interface.

Technical Information

Computer without DHCP server

- 1 Save all AGC-100 parameters on a USB memory stick ("SAVE SETUP").
- 2 Set the following Ethernet parameters in the saved CSV file on the memory stick:
IP ADDRESS: 192.168.0.1 (192.168.0.2 for a second unit, and so on)
NETMASK: 255.255.0.0
DHCP: OFF
- 3 Load the modified parameters onto the AGC-100 ("RESTORE SETUP").
- 4 Connect the AGC-100 to a computer:
 - with a crossover Ethernet cable
 - via a switch, or
 - with an Ethernet patch cable (precondition: the interface is auto MDI-X capable).
- 5 Search for the AGC-100 in the network using the Ethernet Configuration Tool and assign it to a virtual COM interface.
- 6 Start the program for communication with the AGC-100 and connect it to the assigned COM interface.

Ethernet Configuration Tool

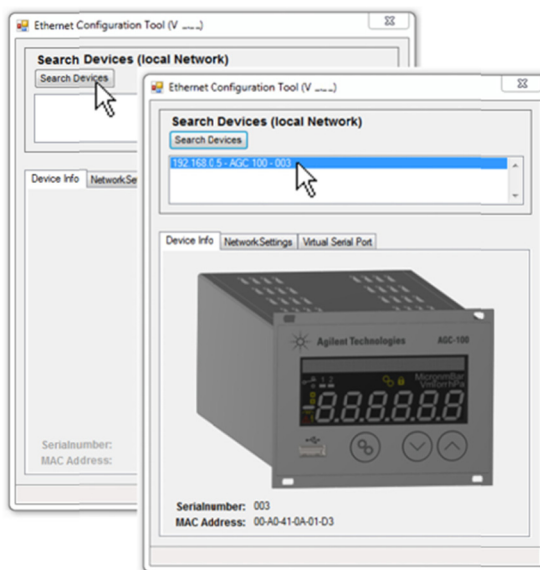
With the Ethernet Configuration Tool a virtual serial interface (COM) can be assigned to an IP address. In addition, it allows configuration of the Ethernet interface via a computer.

Precondition: Windows 7 or 8 operating system (does not work under Windows XP).

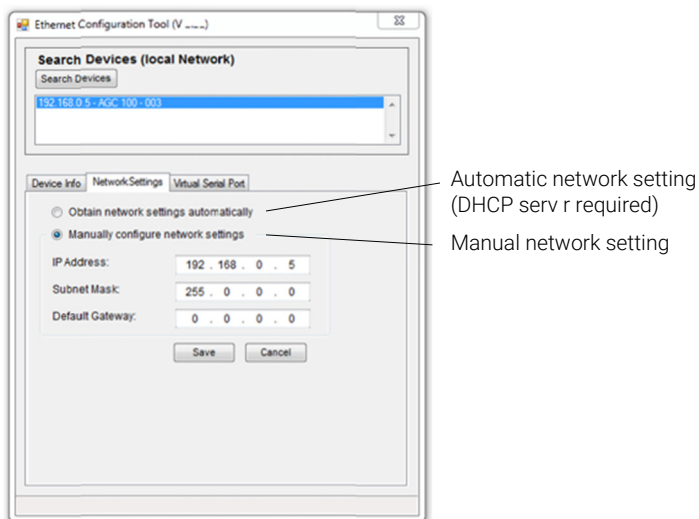
- 1 Download the Ethernet Configuration Tool from the CD ROM or from our website "www.agilent.com".

Technical Information

- 2 Start the Ethernet Configuration Tool and click on <Search Devices>: the Tool searches the local network for connected devices and lists the devices thus found in the selection window The <Device Info> register shows basic information about the selected device.

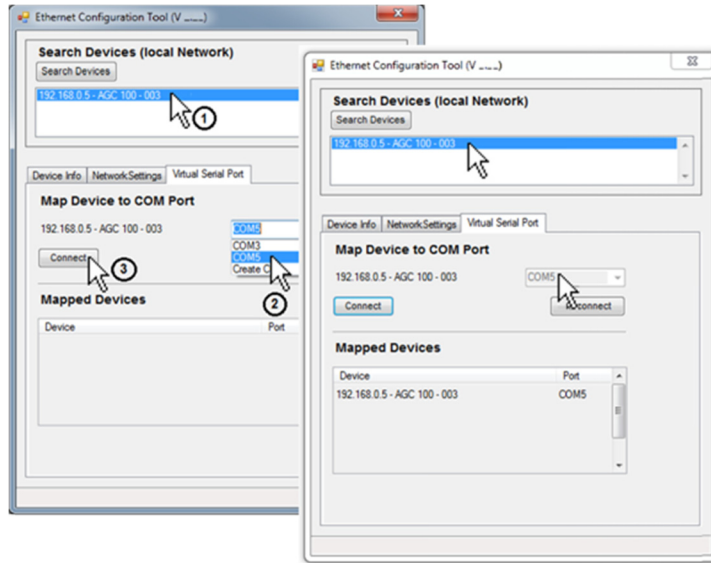


- 3 Automatic or manual network setting occurs in the <Network register>.

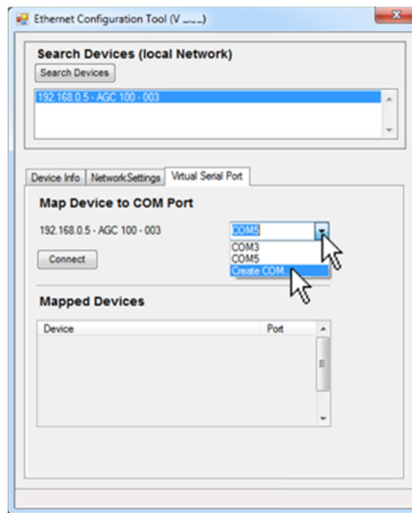


Technical Information

- 4 In the <Virtual Serial Port> register a specific COM Port can be assigned to each device, and/or ...



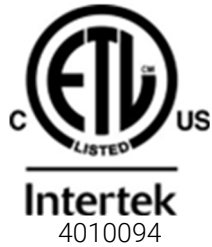
... a new COM Port can be created.



NOTE

The new created virtual interface (COM) appears in the list box and in the Windows Device Manager

ETL Certification



ETL LISTED

The product AGC-100

- conforms to the UL Standards UL 61010-1 and UL 61010-2-030
- is certified to the CSA Standards CSA C22.2 # 61010-1 and CSA C22.2 # 61010-2-030

Vacuum Products Division Instructions for returning products

Dear Customer,

Please follow these instructions whenever one of our products needs to be returned.

Complete the attached **Request for Return form** and send it to Agilent Technologies (see below), taking particular care to include the completed **Health and Safety** declaration Section. No work can be started on your unit until we receive a completed copy of this form.

After evaluating the information, Agilent Technologies will provide you with a **Return Authorization (RA) number** via email or fax, as requested. Note: Depending on the type of return, a Purchase Order may be required at the time **the Request for Return is submitted**. We will quote any necessary services (evaluation, repair, special cleaning, eg).

Product preparation

- Remove all accessories from the core product (e.g. inlet screens, vent valves).
- Prior to shipment and if applicable for your product, drain any oils or other liquids, purge or flush all gasses, and wipe off any excess residue.
- If ordering an Advance Exchange product, please use the packaging from the Advance Exchange to return the defective product.
- Seal the product in a plastic bag, and package product carefully to avoid damage in transit. You are responsible for loss or damage in transit.
- Include a copy of the Health and Safety Declaration in the shipping documentation on the outside of the shipping box of your returning product.
- Clearly label package with RA number. Using the shipping label provided will ensure the proper address and RA number are on the package. Packages shipped to Agilent without a RA clearly written on the outside cannot be accepted and will be returned.
- Return only products for which the RA was issued.

Shipping

- Ship to the location specified on the printable label, which will be sent, along with the RA number, as soon as we have received all of the required information. Customer is responsible for freight charges on returning product.
- Return shipments must comply with all applicable Shipping Regulations (IATA, DOT, ADR, etc.) and carrier requirements.

RETURN THE COMPLETED **REQUEST FOR RETURN** FORM TO YOUR NEAREST LOCATION:

EUROPE:

Fax: 00 39 011 9979 330
Toll Free: 00 800 234 234 00

vpt-customer@agilent.com

NORTH AMERICA:

Fax: 1 781 860 9252
Toll Free: 800 882 7426, Option 3

vpl-ra@agilent.com

PACIFIC RIM:

Please visit our website for
individual office information

<http://www.agilent.com>



TERMS AND CONDITIONS

Please read the terms and conditions below as they apply to all returns and are in addition to the Agilent Technologies Vacuum Product Division – Products and Services Terms of Sale.

- Unless otherwise pre-negotiated, customer is responsible for the freight charges for the returning product. Return shipments must comply with all applicable **Shipping Regulations** (IATA, DOT, etc.) and carrier requirements.
- Agilent Technologies is not responsible for returning customer provided packaging or containers.
- Customers receiving an Advance Exchange product agree to return the defective, rebuildable part to Agilent Technologies **within 15 business days**. Failure to do so, or returning a non-rebuildable part (crashed), will result in an invoice for the non-returned/non-rebuildable part.
- Returns for credit toward the purchase of new or refurbished Products are subject to prior Agilent approval and may incur a restocking fee. Please reference the original purchase order number.
- Units returned for evaluation will be evaluated, and a quote for repair will be issued. If you choose to have the unit repaired, the cost of the evaluation will be deducted from the final repair pricing. A Purchase Order for the final repair price should be issued within 3 weeks of quotation date. Units without a Purchase Order for repair will be returned to the customer, and the evaluation fee will be invoiced.
- Products returned that have not been drained from oil will be disposed.
- A Special Cleaning fee will apply to all exposed products
- If requesting a calibration service, units must be functionally capable of being calibrated.



Vacuum Products Division
Request for Return Form

Customer information
Company:
Address:
Contact Name:
Tel:
Fax:
Email:

Equipment
Product description
Agilent PartNo
Agilent Serial No
Original Purchasing Reference
Failure description
Type of process (for which the equipment was used)

Type of return
Non Billable
Billable
Exchange
Repair
Upgrade
Demo
Calibration
Evaluation
Return for Credit
New PO # (hard copy must be submitted with this form):

Health and safety
The product has been exposed to the following substances:
Substances (please refer to MSDS forms)
Trade name
Chemical name
Chemical Symbol
CAS Number
Toxic
Harmful
Corrosive
Reactive
Flammable
Explosive (*)
Radioactive (*)
Biological (*)
Oxidizing
Sensitizer
Other dangerous substances

Goods preparation
If you have replied YES to one of the above questions. Has the product been purged?
If yes, which cleaning agent/method:
Has the product been drained from oil?
I confirm to place this declaration on the outside of the shipping box.

I declare that the above information is true and complete to the best of my knowledge and belief.
I understand and agree to the terms and conditions on page 2 of this document.

Name:
Position:
Date:
Authorized Signature:

NOTE: If a product is received at Agilent which is contaminated with a toxic or hazardous material that was not disclosed, the customer will be held responsible for all costs incurred to ensure the safe handling of the product, and is liable for any harm or injury to Agilent employees as well as to any third party occurring as a result of exposure to toxic or hazardous materials present in the product.

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In This Book

The manual describes the following:

- Instruction for Use
- Technical information

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