Fig. 1

1. Important Information

Dear Customer,

You have purchased an instrument that was manufactured in our company, which is certified according to DIN EN ISO 9001.

The pressure controllers are manufactured according to the valid standards. Their designs, dimensions and materials represent the state of engineering at the time of printing.

We reserve the right to change and replace components without further notice.

The integrated pressure sensors are, unless otherwise agreed, calibrated in compliance with test certificate 3.1 according to DIN EN 10204, and thus traceable to a national standard.

Please read these operating instructions carefully before taking the precision pressure controller / calibrator DPC 3800 / DPC 3800 HDG (⇨ fig. 1) into operation.

The following operating instruction was composed with due care. The following chapters provide you with all information necessary for a safe handling.

Please ensure that all persons, who operate the device, have read and understood these operating instructions.

It is, however, not possible to take into account all versions and possible fields of application in this manual.

If you have any questions regarding a special application, regarding the devices, storage, mounting or operation, please contact us as manufacturer or the supplier.

Should a reason for complaint however arise, please return your device with a detailed description of faults to our factory.

For special versions, please note the specifications indicated on the delivery note.

Please support us in improving this operating instruction. We will gladly accept your advice.

☞ All applications according to regulations are explicitly stated, any other application is considered improper use!

The ARMANO Messtechnik GmbH does not assume liability for any damage that arises from incorrect use of the device or from disregard of the information contained in this manual.

Please keep the operating instructions in a safe place to draw on it as and when required.

Do not tamper with the device on your own. Otherwise, all warranty claims will be void.

No reproduction of this operating instruction (in whole or in part) is allowed.

Not all functions that are depicted and described in this manual are available for every instrument version.

Firmware - Manual - Version Key	
Manual	**Firmware**
V 1.1	BBVO.959BV

2. Contents

3. General Information

- The manual is aimed at specialists and semi-skilled personnel.
- Please read the instructions carefully before carrying out any operation and keep the specified order.
- Thoroughly read and understand the information in chapter 4 "General Safety Instructions".

If you have any problems or questions, please contact your supplier or contact us directly at:

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3.1 Pictographs Used

In this manual, pictographs are used as hazard warnings.

Particular information, instructions and restrictions designed for the prevention of personal or substantial property damage:

WARNING! Is used to warn you against an imminent danger that may result in personal injury or death.

IMPORTANT! Is used to warn you against a possibly hazardous situation that may result in personal, property or environmental damage.

CAUTION! Is used to draw your attention to important recommendations to be observed. Disregarding them may result in property damage.

DANGER! This symbol is used for hazards generated by electric current. Disregarding these safety instructions may result in serious or fatal injuries.

Passages in the text containing **explanations, information or advice** are highlighted with this pictograph.

The following symbol highlights
actions you have to conduct
or
instructions that have to be strictly observed.

4. General Safety Instructions

Please read this operating instruction thoroughly before operating the pressure controller DPC 3800 / DPC 3800 HDG. Disregarding the containing warnings, especially the safety instructions, results in a risk of fatal injury. Severe personal injuries as well as property damage may arise.

Any use of the pressure controller DPC 3800 / DPC 3800 HDG diverting from or exceeding the set applications according to the regulations is not allowed.

It is required to comply with all technical specifications of the pressure controller according to this manual.

The precision pressure controller is to be handled with care. The permissible ambient conditions according to data sheets 10461 and 10463 are to be kept.

The device is supplied with hazardous voltages via mains cable. Even after the disconnection from the power supply, dangerous voltages may be temporarily present due to capacities.

IMPORTANT! Before mounting, commissioning and operating, it is necessary to ensure that the device is suitable concerning pressure range, version and specific measuring conditions.

Do not open the device.

DANGER! The device may only be opened by trained and qualified personnel. There is a risk of an electric shock.

Transporting the device from a cold to a warm environment, condensation may result in a failure of the function. In such a case, make sure the device temperature has adjusted to the ambient temperature before putting it into operation again.

If faults cannot be corrected with the help of this operating instruction, the device has to be decommissioned instantly and secured against unintentional commissioning.

The manufacturer shall not be held liable for any damage due to misuse of the device. Repairs shall only be performed by the manufacturer. Any modifications or changes to the device are not permissible.

4.1 Operator's Obligation to Exercise Diligence

The pressure controller DPC 3800 / DPC 3800 HDG was designed and manufactured following a careful selection of standards to be complied with as well as further technical specifications. It therefore complies with the state of the art and guarantees maximum safety.
This safety is achieved in industrial practice only if all necessary measures are taken.
The necessary measures are subject to the due diligence of the user of the pressure controller DPC 3800 / DPC 3800 HDG.

In particular, the user shall ensure that
- the pressure controller DPC 3800 / DPC 3800 HDG is only used according to the regulations (⇨ chapter 6 “Product Description”).
- there exist proved safety mechanisms, which avoid any risks for personnel or devices, especially test items (UUT) in case of undue pressurisation or leakage of the applied media.
- the device and all components involved are only operated when in a flawless and fully functional condition, when the installation and commissioning was carried out correctly and when regular maintenance is conducted.
- the persons, who operate the pressure controller have access to this manual at all times and that they have read and understood this manual.
- the pressure controller shall only be mounted, commissioned, maintained and put out of operation by authorised, trained and instructed personnel, who are able to independently recognise potential hazards.
- the pressure controller must always be handled with the care necessary for an electronic precision measuring device.

4.1.1 Personnel Qualification

WARNING! Risk of injury in case of insufficient qualification!

Personnel, responsible for mounting, commissioning, operating and decommissioning has to be adequately qualified for these tasks.

Qualified personnel are those persons, who are familiar with setting up, mounting, commissioning and operating this pressure controller DPC 3800 / DPC 3800 HDG and those, who have an appropriate qualification corresponding to their function.

Attention should be paid to directions concerning occupational safety and regulations of the employer's liability insurance association.

4.2 Basic Safety Instructions

Sound and safe operation of the pressure controller requires proper transport, professional storage, set-up, mounting and intended use. A careful operation and scheduled interval maintenance is required for an electronic precision measuring device.

In the case of an error, a high medium pressure or vacuum may be applied on the input and output connections. An unregulated release of gas pressure poses a serious danger for humans and the environment.

If the display is damaged, please pay attention to glass fragments since you might cut or injure yourself.

Further important safety instructions can be found in the various sections of this operating instruction.

4.3 Personal Protective Equipment

WARNING! High sound pressure due to outpouring medium.

Wear ear protection!

When working with and on the device, wear safety glasses!

4.4 Safety Instructions Concerning the Operation

Before pressurisation of the pressure controller, all involved components shall be in a flawless and fully functional condition. The attached components shall be suitable for the applied maximum pressure.
Check the screw fittings for leaks and that they are firmly seated.

The used medium shall meet the requirements according to the operating instruction.

Maintenance, cleaning and service works on the pressure controller shall always be carried out under voltage-free and pressure-free conditions of the system.

Ensure that a safe pressure release is possible on the rear side of the pressure controller.

The limit values for voltage and current must not be exceeded.

4.5 Safety Markings on the Pressure Controller

4.5.1 Explanation of Symbols

This operating instruction is to be read prior to mounting and commissioning by all means!

With the CE marking, the pressure controller DPC 3800 / DPC 3800 HDG complies with the current European Directives.

For disposal, return the product to the manufacturer or bring it to a designated collection facility. See EU Directive 2012/19/EU.

4.6 Information on the Electromagnetic Compatibility (EMC)

4.6.1 EN 55011 (or CISPR 11)

This is a device of class A for interference emission and it is designed for use in an industrial environment.

In other environments, e.g. living and business areas, it might possibly interfere with other devices. In this case, the user may be required to take appropriate corrective action.

5. Device Description

Fig. 5

Features / specialties:
The pressure controller DPC 3800 / DPC 3800 HDG (⇨ fig. 5) features a wide range of industrial capabilities.

- Pressure controller with precision pressure sensor
- Up to 3 precision sensors can be actuated automatically (plus barometric reference)
- Customised configurations of the pressure controller available
- Very high measuring rate
- Colour touchscreen, LED backlight
- Easily calibrated
- Modular construction
- Fully digital measuring instrument
- Automatic creation of test certificates via full version calibration software DynaCal

Instrument versions:
Please refer to the delivery note of your device for detailed information on the range of function and on the scope of delivery.

5.1 Software License

This product contains intellectual property, i.e. software programmes that are licensed for use by the end user / customer (hereinafter “end user”).

This is not a sale of such intellectual property.

The end user shall not copy, disassemble or reverse compile the software programme.

The software programme is provided to the end user “as is” without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability and fitness for a particular purpose. The entire risk of the quality and performance of the software programme is with the end user.

The ARMANO Messtechnik GmbH shall not be held liable for any damage suffered or incurred (including, but not limited to, general, special, consequential or incidental damage including damage for loss of business profits, business interruption, loss of business information and the like), arising from or in connection with the delivery, use and performance of the software programme.

6. Product Description

6.1 Intended Use

The modular controller DPC 3800 / DPC 3800 HDG is equipped with up to three precision sensors and an optional barometric reference. The pressure connections of the controller DPC 3800 / DPC 3800 HDG are located on the rear side. Due to a measurement uncertainty of 0.01 % FS of the entire measuring chain and its control stability of 0.003 % FS, the controller DPC 3800 / DPC 3800 HDG is suited for the automatic calibration of pressure measuring instruments.

WARNING! The controller shall only be used with clean dry air or nitrogen. Workshop air shall be avoided and according to Article 2 Section 2 of the Directive 67/548/EEC, it is essential to avoid using hazardous media as pressure medium.

The medium, which was used as pressure transmission medium during calibration, shall be used preferably (⇨ calibration certificate included in the delivery).

Strictly adhere to the indicated limit values of the individual pressure sensors as well as all other technical specifications listed in this manual.

Extremely fast pressure change rates pose a danger for the sensor technology. Especially, if they result in an internal pressure (even for a short time), which exceeds the upper range value of the controller, since they mean a high mechanical stress for the sensor technology. A protection by means of the integrated overload device cannot be guaranteed in such a case, since there is a certain response time required for actuation.

All integrated pressure sensors are equipped with a calibration certificate for the entire measuring chain (⇨ enclosure). Improper handling or exceeding the maximum pressure range might possibly require recalibration and adjustment. In this case, please return the device immediately to the manufacturer.

The device is not suitable for the operation in potentially explosive areas. The DPC 3800 / DPC 3800 HDG is no safety component according to the pressure equipment directive and must not be used as such. If not used according to this operating instruction, no safe operation of the DPC 3800 / DPC 3800 HDG is ensured.

The operator of the device, not the manufacturer, is liable for any personal and material damage that arises from unintended use!

6.2 Design

The precision pressure controller DPC 3800 / DPC 3800 HDG is available as stackable desktop case or optional as 19" rack mounting with side panels including mounting kit. Furthermore, an optional barometric reference sensor is available. The main components of the precision pressure controller DPC 3800 / DPC 3800 HDG are the measuring and control electronics, three or five magnetic valves, evaluation unit and the interfaces RS-232, Ethernet and touchscreen.

6.3 General Description of Function

- Up to three temperature compensated high-precision pressure sensors
- An optional internal, highly precise barometric reference sensor indicates the pressure change from differential pressure to absolute pressure
- The DPC 3800 / DPC 3800 HDG controls (positive or negative) pressure changes of 10 % FS at a test volume of 50 ml within ≤ 10 seconds
- Pressure ranges > 100 kPa measuring uncertainty (K = 2) 0.01 % FS or
  Pressure ranges < 100 kPa difference measuring uncertainty (K=2) 0.03 % of the measuring span
  Recommended calibration interval: 1 year
- Compact case or 19" rack mounting
- Remote operation via RS-232 or Ethernet
- Emulation of other standard controllers

6.4 General Instructions on the Interface Communication

For integration in existing systems an RS-232, Ethernet or optionally IEEE-488.2 interface or an analogue output is available.

6.4.1 Ethernet Interface

The Ethernet communication port enables the DPC 3800 / DPC 3800 HDG to communicate with computers via 10/100 Base-T-Specifications.

Please consult your network administrator before connecting the device with your network to avoid conflicts with existing IP addresses.

Ethernet communications are transmitted via RJ-45 standard cable. Prior to the first use of Ethernet communication, the four parameters IP, Net mask, Gateway and Port must be set. These are configured in the communication set up menu.

6.4.2 RS-232 Interface

When using the RS-232 interface, a cable must be connected directly from the instrument to a suitable port on the computer ('point to point' link). Table 6.4.5 shows the PIN connections for the 9-pin D-type, RS-232 connector, the RS-232 control signals, and the computer and pressure connection. The device is configurated as data terminal equipment (DTE).

6.4.3 IEEE-488.2 Optional Interface

The connection of the IEEE-488.2 interface is designed as a 24-pin IEEE-488 socket. The manufacturer of the IEEE-488 interface board provides software to allow communication between the DPC 3800 / DPC 3800 HDG and various programming languages.

6.4.4 DPC Interface Configuration

Connector pin assignment DPC 3800 / DPC 3800 HDG (option push button)

PIN	Configuration	Description
1	Vent 1 CNT	valve 1 control output cut off control unit
2	Vent 1 GND	valve 1 ground
3	Vent 2 CNT	valve 2 control output exhaust UUT (test item)
4	Vent 2 GND	valve 2 ground
5		
6		
7		
8		
9	Control + 24 V	supply for control gate input
10	Control Input	control gate input (pedal button)

USB interface:
The USB 2.0 FS connection on the rear side of the device is a socket type USB-B. It is needed for service purposes only.

DPC commands:
⇨ Chapter 17 "Annex"

6.4.5 RS-232 Socket 9 PIN Sub-D

PIN	Configuration	Description
1		
2	RX	transmission (wire colour yellow)
3	TX	receive path (wire colour green)
4		
5	signal ground	(wire colour brown)
6	DSR	dataset ready (wire colour white)
7		
8		
9		

6.5 Operating Principle of the Multiple Range Version

Besides the main sensor, the pressure controller multiple range version includes a second or third precision sensor in order to increase the accuracy of the lower part of the pressure range.
Depending on the required working pressure, the multiple range controller chooses automatically and intelligently the pressure range, which is most suitable.
This is carried out regardless of whether the set pressure was entered via touchscreen or sent via interface.
The combination of the precision pressure sensors is provided flexible according to customer requirements.
Sensors with a pressure range ratio of up to 1:10 may be combined to ensure a wide calibration range.

7. Technical Data

Pressure Ranges	DPC 3800	DPC 3800 HDG
Gauge pressure	−1 / +1 bar	0 – 100 bar
	−1 / +3 bar	0 – 160 bar
	−1 / +10 bar	0 – 220 bar
	−1 / +30 bar	
	−1 / +100 bar	
	0 – 2 bar	
	0 – 5 bar	
	0 – 20 bar	
	0 – 60 bar	
Absolute pressure	0 – 1 bar	
	0 – 3 bar	
	0 – 10 bar	
	0 – 30 bar	
	0 – 100 bar	
Differential pressure	±30 mbar	
	±100 mbar	
	±300 mbar	

Optional Barometric Reference	
Function	The barometric reference is required for the change of absolute pressure ⇔ gauge pressure. A pressure controller with relative reference sensors requires vacuum ranges for full functionality.
Pressure range	800 mbar to 1200 mbar abs.
Accuracy	0.008 % FS

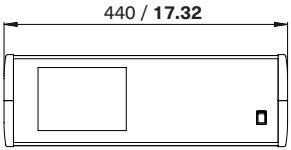
Pressure Units	23 fixed and 1 freely programmable (15 of these via touchscreen)
Instrument Version	desktop case optional: 19" rack mounting with side panels incl. mounting kit
Weight	approx. 7.0 kg (15.43 lb)
Display	
Screen division	actual value, set pressure, steps
Resolution	6 digits
Keypad	colour touchscreen
Warm-up time	< 10 minutes
Response time	approx. 10 ms

Pressure Ranges	max. 3 pressure ranges and 1 barometric reference The turn-down between smallest and largest pressure range can be up to 1:10.
Pressure Connections	G⅛" female optional: 6 mm Swagelok® tube fitting or connection adapter
Media	clean, dry, non-corrosive, non-combustible and non-oxidising gases
Overrange Protection	150 % of the largest pressure range optional: external pressure relief valves
Voltage Supply	auxiliary energy 88...264 V AC, 47...63 Hz
Permissible Ambient Conditions	
Operating temperature	10 to 40 °C (50 to 104 °F)
Storage temperature	0 to 70 °C (32 to 158 °F)
Relative humidity	0 to 95 % r. h. (non-condensing)
Compensated temperature range	15 to 35 °C (59 to 95 °F)

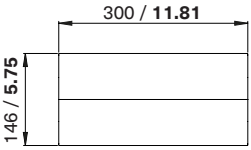
Communication	
Interfaces	RS-232, Ethernet USB (service function only) optional: IEEE-488.2
Switching outputs	24 V DC PWM or TTL level
Instruction Sets	DPC 3800 HD / DPC 3800 HDG, alternative instruction sets available, alignment to existing HOST software upon request
Approvals and Certificates	EMC directive 2014/30/EU, EN 61326-1 emission (group 1, class A) and stability (industrial sector)
Calibration Certificate 3.1	according to DIN EN 10204, optionally internationally traceable calibration certificate

Dimensional Data in mm / inch

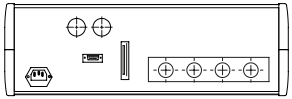
Front view



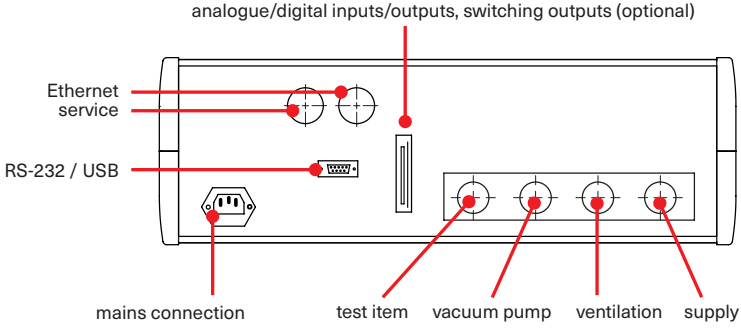
Lateral view



Back view



Electrical connections and pressure connections – back



8. Transport, Packing and Storage

8.1 Transport

The system shall be clean and free of dirt before shipping. This is especially important if the medium is health-damaging, e.g. toxic, corrosive, carcinogenic or radioactive.

The pressure controller DPC 3800 / DPC 3800 HDG shall only be sent within transport boxes that are especially designed for this. Please request such a transport box if necessary.

→ Please wrap the device in an antistatic plastic foil.
→ Put the device into the box and make sure that it is tightly packed with the protective material.
→ If possible, place a bag containing desiccant inside the box.
→ Please make sure that the consignment is labelled as carriage of a highly sensitive measuring instrument.

8.2 Packing Materials Handling

The packing shall only be removed immediately before mounting the DPC 3800 / DPC 3800 HDG.

Please keep all packing materials, since it offers ideal protection for transporting in case of changing operation sites or repair return consignments.

8.3 Storage

The system shall be clean and free of dirt before storage. This is especially important if the medium is health-damaging, e.g. toxic, corrosive, carcinogenic or radioactive.

The storage location shall comply with the following conditions:

- Ambient temperature: 0 to 70 °C (32 to 158 °F)
- Humidity: 35 to 85 % relative humidity (non-condensing)

Avoid the following influences:

- Direct sunlight or vicinity to hot objects
- Mechanical vibration / mechanical shock (by putting it down hard)
- Soot, vapour, dust and corrosive gases
- Potentially explosive environments, flammable atmospheres

The device should be stored in its original transport box, in a place that meets the conditions listed above.

Follow the instructions below to avoid damage:

→ Wrap the device in an antistatic plastic foil.
→ Place the device in the box using the protective material.
→ If stored for a prolonged period of time (more than 30 days), add a bag with desiccant to the box.

9. Installation – Configuration and Function

9.1 Introduction

The following chapter contains recommendations concerning the initial installation of the DPC 3800 / DPC 3800 HDG. The installation is carried out as follows: unpack the device, set it up at an appropriate place, connect it, switch it on and configure the system if necessary.

9.2 Scope of Delivery

Apart from additional parts you may have ordered, the delivery consists of:

- Basic device precision pressure controller / calibrator
- Mains connection cable 1.5 m
- Operating instructions with calibration certificate of the sensor technology
- Optional: recommended interface cables

9.3 Unpacking

Please unpack all components of the device carefully and check the individual parts for damage. Immediately report any damage to the shipping company.

9.4 Setting Up

The installation site shall comply with the following conditions:
- Ambient temperature: 15 to 35 °C (59 to 95 °F)
- Humidity: 0 to 95 % relative humidity, without condensation
- Flat, horizontal position; secure and fixed working surface (desktop version) or proper installation in a solid 19" mounting frame / 4HE (19" rack mounting)
- During operation, pressure escapes at the rear side of the device. Therefore, make sure that personnel has no access to the rear side during operation as well as to the vent opening in case of piped **Vent / Low supply** port.

Avoid the following influences:
- Direct sunlight or vicinity to hot objects
- Unstable or highly inclined installation position
- Mechanical vibrations
- Proximity to disturbing sources with strong electromagnetic fields, such as high voltage appliances, mobile phones or power lines
- Soot, vapour, dust and corrosive gases
- Potentially explosive environments

Pressure supply requirements:
- Stable supply pressure: slightly above the full scale value of the controller
- Permissible media: dry, clean air or nitrogen
- Vacuum: at least 50 litres / min (if required)

9.5 Pressure Connections

All pressure connections (⇨ fig. 9.5), except for the **Ref.** port, have G⅛" female connections at the rear side of the instrument. The cross-section of the piping shall be selected according to length and pressure.

Fig. 9.5

Test:
Below the label **Test** is the pressure connection, where the pressure, which is precisely regulated by the controller, is applied or an applied pressure is precisely measured by the device.

Supply:
Below the label **Supply** is the pressure connection for the supply pressure, which should be slightly higher than the full scale value of the controller (see labelling strip on the upper right front side of the device).

Vac:
Below the label **Vac** is the pressure connection for the vacuum supply (only for supply pressure < 40 bar). In case of an overpressure version, atmospheric pressure may be optionally applied here.

Vent:
Below the label **Vent** is the pressure connection, with which the system is abruptly vented to atmosphere in certain situations.

Ref.:
If there is no blind plug available, the port (connection) labelled **Ref.** is the connection to the optional barometric reference as well as to the reference port of the pressure sensors with overpressure measuring ranges < 4 bar. This connection must be left open to atmosphere and external pressure must not be applied.

9.6 Instructions on the Pressure Connections

The user has to ensure that any medium that escapes from the **Vent** or **Supply** port is released in a suitable manner without danger for humans or the environment. Furthermore, suitable sound dampers shall be used.

The higher the supply pressure at **Supply** (inlet port of the control unit), the higher the possible pressure, which can leave the system through **Vent** (outlet port of the control unit).
If a vacuum pump is connected to **Vac**, appropriate protective measures have to be taken by the user, so that the vacuum pump will not be damaged.

Furthermore, the maximum supply pressure shall not endanger the vacuum pump. (Therefore, the technical data of the vacuum pump have to be checked beforehand.)

If a vacuum is applied to the **Supply** port of the controller, negative pressure peaks of several –100 mbar might occur at the **Test** port for a short time when changing from the measuring mode to the control mode.

Prior to the connection of the device, there must be ensured that there exist appropriate protective measures, which prevent an overload of the test item or the device. The supply pressure at the **Supply** port must not exceed the overload capability of the test item.

The pressure pipes, couplings and other components used for piping must be suitable for the occurring pressures.

9.7 Recommendation Concerning the Pressure Piping

The user must ensure that the used media are available in clean and dry form. If necessary, the sensors have to be protected by using sediment bowls, particle filters or humidity filters.

9.8 Electrical Connections on the Rear Side

The electrical installation has to be carried out according to the following instructions while observing all relevant regulations. It is to be carried out by personnel that is familiar with the safety regulations for working on electrical plants and who can work according to them.

9.8.1 Connection of the Mains Input Socket

Before connecting the mains input socket, make sure that the mains voltage corresponds to the specification of the power supply unit. Switch off the device before connecting it with the mains. Only the provided mains cable should be used. The provided 3-pin mains cable is equipped with a protective conductor. Hence, operate the device only from a three-pin socket and always make sure that the earth conductor is properly connected.

The mains input socket is to be connected, according to the regulations, to a power supply with the provided country-specific connection cable, which is within the stipulated specification (⇨ chapter 7 “Technical Data”).

9.8.2 Connection of the Interfaces

The interface cables must not be longer than 3 m and must be laid separate from cables with voltages > 60 V. Devices, which are connected to the interfaces, have to comply with the standard IEC 60950.

RS-232 interface:
The RS-232 interface is designed as a 9-pin SUB-D socket and is to be connected as required according to the regulations with the cable mentioned below or a 9-pin 1:1 cable of similar quality:
3 m Data Extension Cable; DB9 Male / DB9 Female

IEEE-488 interface:
The connection of the IEEE-488 interface is designed as a 24-pin IEEE socket and is to be connected as required according to the regulations with the cable mentioned below or a cable of similar quality:
2 m IEEE-488-2 MPB CABLE

9.8.3 Connection of the Relay Outputs

When connecting the relay outputs, the national installation regulations (e.g. Germany: VDE standard) and the Appliance Safety Law are to be observed and followed. The limit values of the relays for current and voltage must not be exceeded. The relays must not have any direct or indirect influence on critical processes.

10. Commissioning and Operating

Prior to switching on the device, it must be ensured that the device was installed according to the instructions of the previous chapter and that all connections installed are fitted or carried out according to the regulations.
It is necessary to ensure that all specifications, such as supply voltage, supply pressure, operating temperature, humidity, specified media and pressure range are met. Rapid temperature changes might cause condensation within the device. In such a case, allow the device to acclimatise. Before pressurising, appropriate protective measures must be taken to ensure that the device or the test item will not be overloaded. When working on or with the device, safety glasses must be worn. When the supply pressure exceeds 40 bar, ear protection must be worn.
When working with inert gases, these might leak. This is why premises, in which the DPC 3800 / DPC 3800 HDG is operated, need sufficient air ventilation systems.

WARNING! Pressure can accelerate loose components in a hazardous manner.

The device is configurated ex-works in such a way that the individual measured value display (1 window / MEASURING mode) appears on the screen.

After thermal balancing with the installation place, the controller is immediately ready for operation. However, in order to achieve the ideal precision of the system, the device should be switched on about 15 minutes prior to its use.

11. Operation

11.1 Preparations

Instrument displays may differ from the figures in this manual, depending on the selected instrument configuration.

Please ensure that electrical cables and pressure pipes comply with the installation requirements in chapters 9 and 10.

A proper connection of the required components will be accomplished by following the directions below:
→ Make sure that the power switch on the front side is turned off (push the lower part of the **red flip switch**).
→ Connect the supplied mains cable to the power supply.
→ Check the pressure hoses of your pressure supply for damage as well as infiltrating dirt and moisture.
→ Connect a device for pressure supply to the **Supply** port on the rear side of the device. As measured by the stationary pressure sensors, a pressure supply about 10 % above the highest installed pressure level shall be connected in order to guarantee complete control. A compressor is available separately.
→ Connect a filter to the **Vent** port. If no filter is used, this connection must be left open to atmosphere and external pressure must not be applied.
→ Connect a calibration object or a device for pressure testing to the **Test** port. A test item (UUT) is available separately.

CAUTION! The test item might be damaged due to overpressure. Therefore, please bear in mind the permissible maximum pressure of the test item during control and make necessary adjustments on your pressure controller (⇨ chapter 11.4.2).

→ If required, connect a vacuum pump to the **Vac** port. Such a vacuum pump is also available separately.
→ Please test the device prior to use.
→ Get an overview and acquaint yourself with the complete procedure before starting a process on a component or system.
→ For further connection options for external operation please refer to chapter 11.6.

11.2 Switching On and Off

After completing all preparations, turn on the device by pressing the **red flip switch** on the front side of the device. Wait a few seconds for the main menu to appear on the screen (⇨ chapter 11.4.1). The device is now ready for operation.

Before switching off the device, we recommend to release the pressure, which might be within the device, by venting it. To do so, press the `Vent` button via touchscreen in the main menu (⇨ chapter 11.4.1). When the device is vented successfully, turn it off by pressing the **red flip switch** on the front side of the device.

CAUTION! Protect your device from a too high permanent load. If you are not going to use the device for a considerable time, please turn off the pressure supply as well as the device itself.

11.3 Basic Settings

To remove the factory settings, please make the following adjustments:

Pressure unit:
Select the desired pressure unit by pressing the button `Unit` via touchscreen in the main menu
(⇨ chapter 11.4.1).

Operating language:
In the set up menu → `Display` → `Language` (⇨ chapter 11.4.2), the required operating language can be selected.

11.4 Menu Navigation and Buttons

11.4.1 Main Menu

Fig. 11.4.1-1

The main menu is the main screen of the device and appears right after the device is switched on. Here, you can read the actual pressure and the set (reference) pressure and you can make the main settings by using the buttons. Active buttons are always highlighted green. The activation is done via touchscreen. The following buttons and values can be operated or displayed in the main menu:

`Tare:`
The displayed actual pressure value can be saved as tare value. By pressing this button, the actual pressure value is defined as `zero pressure`.

CAUTION! The device might be damaged due to overpressure. Please bear in mind that the actual pressure is not released when set to zero, but is still within the device. During control, this value is further increased by the set pressure.

Absolute pressure `(ABS):`
By activating the `ABS` function, the pressure range is switched from gauge pressure to absolute pressure (this setting is only available if a barometer is integrated). The `Tare` button is locked or not available in the absolute pressure mode.

`Vent:`
By pressing this button, you vent the device.

`Control:`
By pressing this button, you start the control process. Here, the actual pressure is equalised to the set pressure. The control rate is depending on the selected control mode and the volume to be regulated.

`Unit:`
By pressing this button, you access another menu that will enable you to select the required pressure unit via the according button. Via touchscreen, you can choose between 15 different units.

`Set up:`
By pressing this button, you access the set up menu. There you can adjust more precise parameters for the control process. For further information, please refer to chapter 11.4.2.

Pressure range (single range device):
The button with the pressure range (e.g. 0 – 2 bar) represents a sensor with a defined pressure interval. The actual pressure changes accordingly within this range if a button, and therefore the associated pressure sensor, was selected manually.

Pressure ranges (multiple range device):
Additional buttons with different pressure ranges represent further sensors with their respective pressure intervals. The actual pressure changes accordingly within this range if a button, and therefore the associated pressure sensor, was selected manually.

`AUTO:`
If this button is activated (highlighted in green), the device automatically chooses the ideal pressure range.

`Actual pressure:`
This value indicates the controlled actual pressure in the selected pressure unit (e.g. bar) and cannot be modified manually. As soon as the actual pressure is equal to the set pressure within a specified tolerance, this value is highlighted in green.

dP:
The control deviation of the actual pressure from the set pressure is displayed above the actual pressure. The permissible control deviation is set by the three modes `Fast`, `Normal` and `Precision`.

`Set:`
This button displays the reference pressure. This set pressure can also be modified here by pressing the displayed value. Then a new screen appears:

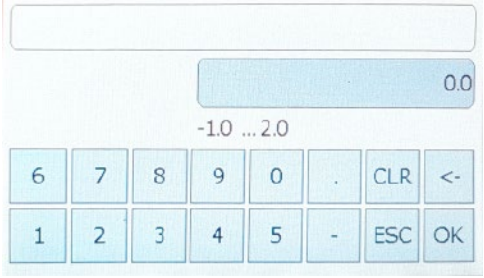


Fig. 11.4.1-2

Enter the desired set pressure via the **numerical keypad**. Previous entries can be deleted with `CLR` or the cursor key. Confirm with `OK`. Press `ESC` if you choose not to save the changes. If the entered value flashes red and is not accepted, the permissible set pressure range might be exceeded.

`Step:`
This button displays the interval or the value, by which the set pressure can be gradually increased or decreased. This value can be changed by pressing the step button. Now enter the required interval via the numerical keypad.

`+ / –:`
With these buttons you can gradually increase (+) or decrease (–) the set pressure. Here, the interval is defined via the field `Step`.

11.4.2 Set Up Menu

In the set up menu, you can adjust the decimal places of the pressure readings, of the control tolerance and of the vacuum valve for a vacuum pump (optional) as well as further settings for an external operation. You may enter the set up menu by pressing the button `Set Up` on the touchscreen both in the main menu and in the submenus of the set up menu. The following screen appears:

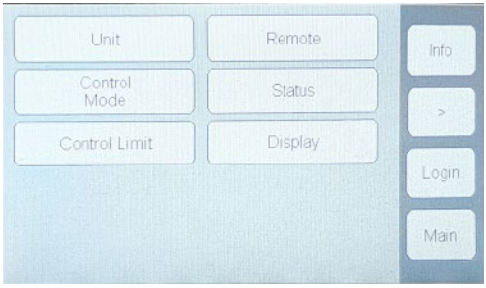


Fig. 11.4.2-1

`Info:`
By pressing this button, the serial number and the BIOS version of the device is displayed.

`Login:`
By pressing this button, you can log on to the service menu (⇨ chapter 11.7).

`Main:`
By pressing the button `Main`, you return to the main menu.

`Control mode:`
The three options `Fast`, `Normal` and `Precision` can be accessed via the button `Control Mode`. The selected mode is highlighted in green.

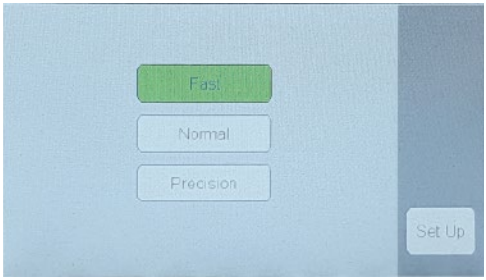


Fig. 11.4.2-2

`Control limit:`
The `Control Limit` indicates from which maximum pressure onwards the safety ventilation shall be activated. This safety ventilation aims to **protect the test item**. This value can be set by touching the field `Control Limit` and entering the required value via numerical keypad. If you want to tap the full potential of a pressure sensor, entering a value slightly above the limit of the pressure sensor is recommended.

Fig. 11.4.2-3

`Remote:`
If an external computer is connected, a command is displayed after pressing this button, which was issued by the external computer prior to this:

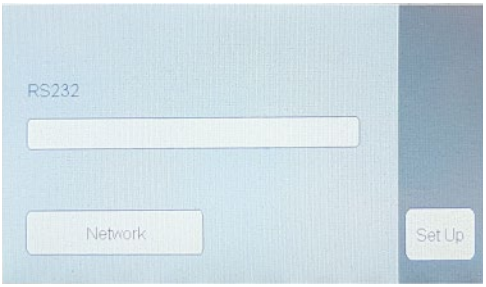


Fig. 11.4.2-4

`Network:`
Via the menus `Set Up` and `Remote` you access the screen `Network`. By pressing this button, you access the network menu, where you can establish the connection of an external computer. There you have the option to enter **IP address**, **subnet** and **gateway** by touching the respective fields:

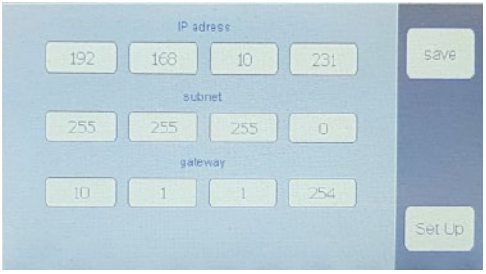


Fig. 11.4.2-5

Please confirm your entries with `Save`. For detailed information on the external operation, please refer to chapter 11.6.

`Display:`
By pressing the button `Display`, you access the menu, where you can adjust the screen brightness. The percentage changes are made via the + / – buttons. In this menu you will also find the button `Language` for the selection of the desired operating language as well as the button `Units res.` for the adjustment of the desired decimal places of the units:

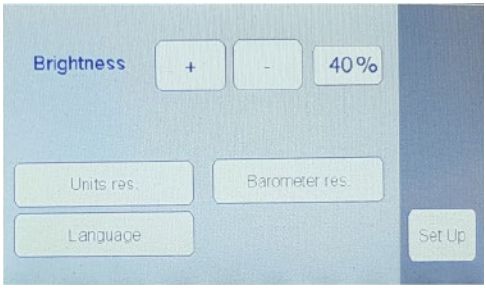


Fig. 11.4.2-6

`Language:`
Up to now, the languages `German`, `English`, `Russian` and `Italian` are available as operating language. New languages are added constantly and can be accessed via the button `Language`. The button of the selected language is highlighted in green.

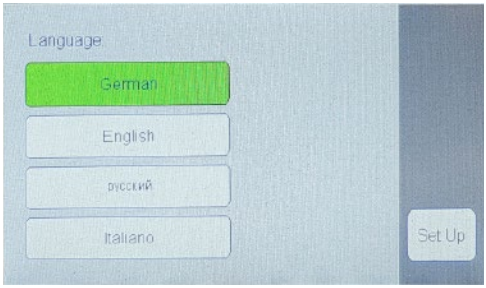


Fig. 11.4.2-7

`Units resolution:`
With this button, you define the decimal places of the respective pressure units depending on the selected control mode:

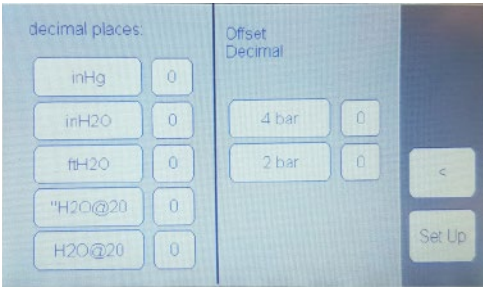


Fig. 11.4.2-8

Select the desired unit, for which you want to change the decimal places, via touchscreen. A numerical keypad appears, where you can enter the desired number of decimal places.

11.5 Control

The core function of this device is the pressure regulation and calibration of pressure measuring instruments. Please regard the following directions for successful control:

→ Connect a sufficient pressure supply to the connection **Supply**.
→ Connect a test item if necessary.
→ Switch on the device. The **main menu** appears (⇨ fig. 11.5):

Fig. 11.5

→ Press the button Unit and enter the required pressure unit.
→ If necessary, enter the decimal places (units), the control tolerance as well as the control limit via the set up menu.
→ Enter the set pressure in the main menu.
→ Enter the step interval via the field Step.
→ Afterwards, press the button Control. The actual pressure will now be adjusted to the set pressure.
→ If applicable, please pay attention whether the test item indicates the settled actual or set pressure correctly.
→ Press the + or the – button to increase or decrease the set pressure gradually.
→ When you finished the control process, you can manually exhaust the pressure from the device by pressing the button Vent in the main menu.

☞ **If the actual pressure exceeds the previously set control limit, the safety ventilation will be initiated automatically to protect the test item.**

CAUTION! The device may be damaged by overpressurisation. Therefore, please follow the directions on the button Tare in chapter 11.4.1.

11.6 External Operation

You have the following options if you want to control the device externally:

Ethernet interface:
The Ethernet communication port enables the device to communicate with a computer via 10/100 Base-T-Specifications. The Ethernet communication is transmitted via RJ-45 standard cable.

Prior to the first use, the parameters **IP address**, **subnet** and **gateway** must be set. Access the **set up menu** via the **main menu** and press the button Network.

☞ **Please consult your network administrator before connecting the device with your network to avoid conflicts with existing IP addresses.**

RS-232 interface:
When using the RS-232 interface, a cable must be connected directly from the instrument to a suitable port on the computer ('point to point' link). The device is configurated as data terminal equipment (DTE).

IEEE-488.2 interface (optional):
The connection of the IEEE-488.2 interface is designed as a 24-pin IEEE-488 socket. The manufacturer of the IEEE-488 interface board provides software to allow communication between the DPC 3800 / DPC 3800 HDG and various programming languages. Usually, also an interactive troubleshooting programme is provided.
For further details on this, please read the documentation of the board manufacturer.

Software:
In addition to the calibration software DynaCal, which allows for comfortable calibration of pressure measuring instruments, including automatic creation of test certificates, the user is able to create own software programmes as well (e.g. via LabVIEW).

☞ **Please select the button Remote via the set up menu to read the external commands from your connected computer on the device (⇨ chapter 11.4.2).**

11.7 Service Menu

In the **set up menu** (⇨ chapter 11.4.2) under Login, you can log on to the protected service section of the device. There, basic settings, maintenances and fine adjustments can be made.

CAUTION! Unauthorised modifications in the service menu may result in considerable functional limitations of the device. Therefore, all settings in this section shall be made by trained and qualified personnel only.

If you enter the service number **48485** in the login section, you access the following service menu (⇨ fig. 11.7-1):

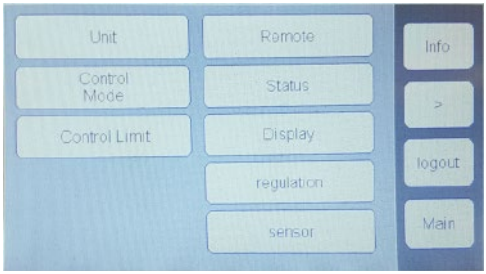


Fig. 11.7-1

Additionally to the freely accessible parameter settings, you can make protected settings there as well.

`Regulation:`
By pressing this button, you access another menu (⇨ fig. 11.7-2):

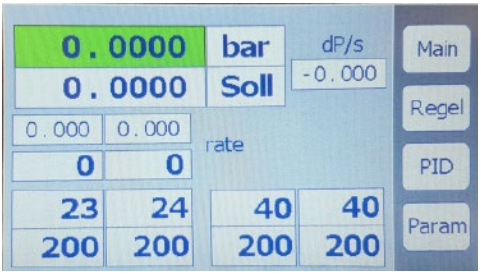


Fig. 11.7-2

In the lower part of the screen, you can read the respective pulse widths. The left side represents the pressure generation, whereas the right side represents the pressure reduction.

☞ **Please enter this menu and contact our sales team if you have problems with your device. In case of uncertainties, do not make any arbitrary adjustments.**

By pressing the buttons `Main` and `Set Up`, you return to the main and set up menu respectively.

The button `Control` starts the control process.
By pressing the button `PID`, you access the following submenu (⇨ fig. 11.7-3):

Fig. 11.7-3

By pressing the button `Stable`, you can define whether the deviation (dP) of the actual pressure is displayed **above the actual value field (`Stable` switched on)** or **within the actual value field (`Stable` switched off)** in the main menu.

`Sensor:`
By pressing the button `sensor`, the following menu appears (⇨ fig. 11.7-4):

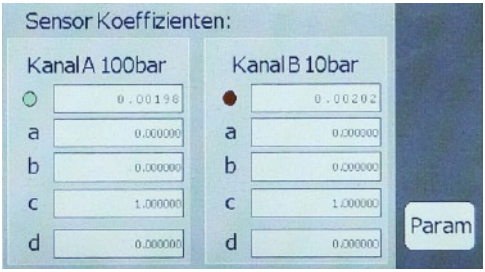


Fig. 11.7-4

This signal display shall only be accessed for checking the sensors. The fields concerning the recalibration should not be modified arbitrarily by the operator.

12. Maintenance

CAUTION! Material damage and loss of warranty!
Any modifications or interventions in the device, made by the customer, might damage important parts or components. Such intervention leads to the loss of any warranty and manufacturer's responsibility!
→ Never modify the device or perform any repairs yourself.

Have your device maintained regularly to ensure proper function of the instrument. For this purpose, please contact authorised service partners or contact ARMANO Messtechnik GmbH directly. The manufacturer and service partners offer you the expertise and the qualifications necessary for proper maintenance of your instrument with appropriate special tools.

In order to avoid a loss of functionality, we recommend the following intervals:
- Recalibration of the sensor technology at an interval of 1 year
- Maintenance of the mechanical components incl. cleaning and the replacement of the backup battery at an interval of 2 years

13. Dismounting and Disposal

WARNING! Risk of injury!
Never remove the device from a system in operation.
Make sure that the system is switched off professionally.

Work on electrical or pneumatic / hydraulic equipment must be carried out by qualified and authorised technical staff only, observing the corresponding safety regulations and according to the operating instruction.

Before dismounting:
Check before dismounting, whether the system
- is switched off,
- is in a safe and currentless state,
- is unpressurised and cooled down.

Dismounting:
→ Make sure that there is no positive or negative overpressure on the device and that all components are at room temperature.
→ Switch off the device by pressing the main switch on the right of the front side of the device.
→ First, pull out the mains cable from the power socket and then from the mains input socket of the device.
→ Remove the pressure connections.
When removing the outer pressure connections, make sure that the connections on and in the device are not overtightened or loosened.
→ Remove the device if necessary.
→ Make sure that the device is free of any medium.
→ Protect the connections with the supplied protective caps.

Disposal:
Prior to disposal of the device, all adhering medium residues have to be removed. This is especially important if the medium is health-damaging, e.g. corrosive, toxic, carcinogenic or radioactive.

In compliance with the directives 2011/65/EU (RoHS) and 2012/19/EU (WEEE), the device must be disposed of separately as electrical and electronic waste. Please regard legal regulations of the country of distribution.

NO DOMESTIC WASTE!
The instrument comprises various materials. It shall not be disposed of together with domestic waste.

→ Bring the instrument to your local recycling plant

or

→ send the instrument back to your supplier or to the ARMANO Messtechnik GmbH.

14. CE Conformity

CE

The CE marking of the instruments certifies the conformity with prevailing EU directives for placing products on the market within the European Union.
The corresponding declaration of conformity is part of this manual (⇨ chapter 18 “Declaration of Conformity”).

15. Common Units and their Conversion Factors

ID	Name	Symbol	p [bar] / p [unit]	p [unit] / p [bar]
0	Bar	bar	1.000000E+00	1.000000E+00
1	Millibar	mbar	1.000000E+03	1.000000E+03
2	Pascal	Pa	1.000000E-05	1.000000E+05
3	Pound-force / inch^2	psi	6.894757E-02	1.450377E+01
4	Standard atmosphere (760 Torr)	atm	1.013250E+00	9.869233E-01
5	Technical atmosphere	kp / cm^2	9.806650E-01	1.019716E+00
6	Pound-force / foot^2	lbf / ft^2	4.788026E-04	2.088543E+03
7	Kilopond / cm^2	kp / cm^2	9.806650E-01	1.019716E+00
8	Centimetre of water 4 °C	cmWS (4 °C)	9.806380E-04	1.019744E+03
9	Inch of water 4 °C	inH_2O (4 °C)	2.490820E-03	4.014742E+02
10	Inch of water 60 °F	in H_2O (60 °F)	2.488400E-03	4.018647E+02
11	Foot of water 4 °C	ft H_2O (4 °C)	2.988980E-02	3.345623E+01
12	Micrometre of mercury 0 °C (Micron)	µmHg (0 °C)	1.333224E-06	7.500615E+05
13	Millimetre of mercury 0 °C (Torr)	mmHg (0 °C)	1.333224E-03	7.500615E+02
14	Centimetre of mercury 0 °C	cmHg (0 °C)	1.333224E-02	7.500615E+01
15	Inch of mercury 0 °C	inHg (0 °C)	3.386380E-02	2.953006E+01
16	Inch of mercury 60 °F	inHg (60 °F)	3.376850E-02	2.961340E+01

16. Troubleshooting Measures

If faults cannot be cleared with the help of the operating instructions, the device must be decommissioned instantly, it must be ensured that no pressure is applied anymore, and it must be secured against unintentional startups. Following this, the information has to be given to a superior and to authorised service personnel. Repairs shall only be carried out by the manufacturer. Any modifications or changes by the operator to the device are not permissible. Work on electrical or pneumatic / hydraulic equipment must be carried out by qualified and authorised technical staff only, observing the corresponding safety regulations.

In case of faults caused by defects of the electrical or pneumatic / hydraulic equipment, the operators must inform their superiors immediately and consult qualified and authorised technical staff for maintenance.

16.1 Description of Faults and Measures

If the fuses of the mains input socket have to be replaced, only suitable 2 Ampere fuses type T2L250V shall be used.

Description of Faults	Measures
When switching on the device, no measuring value(s) appear(s) after 10 seconds, but the entire screen remains white or dark.	Turn off the device, wait about 5 seconds, and turn it on again.
The screen is dark and the measures for faults of type I are without effect.	Check, whether the mains cable is connected properly. Have also authorised technical staff check whether the supply voltage is correct.
The screen is dark and the measures for faults of type II are without effect.	First, pull out the mains cable from the power socket and then from the mains input socket of the device. After that, pull out the fuse holder and check the fuses.
Malfunction during operation.	Turn off the device, wait 5 seconds, and turn it on again.
Unstable control.	Check the piping for leakages.
Intensified release of medium at the **supply** port during pressure controlling.	Turn off the device, wait about 5 seconds, and turn it on again. (Controller will be reinitialised.)
The set pressure is not reached.	Check, whether the supply pressure at the **supply** port is at the required level (⇨ chapter 7 “Technical Data”) and check the piping for leakages, or check the setting of **control limit** in the **control** tolerance menu: controlled system recognition.

17. Annex

17.1 DPC Commands

Command	Configuration	Description
?	? <CR><LF>	General query command. The answer string will be according to the active output format set with N0 e.g. instrument set N0 will send actual value; desired value; stable status.
N[VALUE]	N0 ... N99 <CR><LF>	Changes the output format. Please refer to the specification of the N command. For optional additions values from 0 to 99 are possible but will cause the answer strings to be the same than N0.
N?	N? <CR><LF>	Query the output format that is currently active.
P=[VALUE]	P=5.05 <CR><LF>	Will set the desired value to 5.05 in current unit.
R0 R1 R2 R3	R1<CR><LF>	Changes the active range. R0 ⇔ auto range. ! The instrument has to be in **vent** mode!
T0	T0<CR><LF>	Tare off. Only in **vent** mode.
T1	T1<CR><LF>	Will tare (zero) all pressure ranges. ! The instrument has to be in **vent** mode!
V0	V0<CR><LF>	Open the vent valve.
V1	V1<CR><LF>	Close the vent valve.
C0	C0<CR><LF>	Pressure controller off.
C1	C1<CR><LF>	Pressure controller on. The instrument will control to the desired value set with P= command.
#T16	#T16<CR><LF>	! Only for compatibility reasons! Will send an actual pressure value.
U	U1 ... U24<CR><LF>	Changes the pressure unit according to entered unit ID.
U?	U?<CR><LF>	Query active pressure unit. The controller will send the unit ID number.
DB=[VALUE] **DB1=[VALUE]** **DB2=[VALUE]** **DB3=[VALUE]**	DB=0.01<CR><LF> DB1=0.01<CR><LF> DB2=0.01<CR><LF> DB3=0.01<CR><LF>	Set dead band of active range. Set dead band of first range. Set dead band of second range. Set dead band of third range.
DB? **DB1?** **DB2?** **DB3?**	DB?<CR><LF> DB1?<CR><LF> DB2?<CR><LF> DB3?<CR><LF>	Query dead band of active range. Query dead band of first range. Query dead band of second range. Query dead band of third range.
LOCK1	LOCK1<CR><LF>	Lock touchscreen.
LOCK0	LOCK0<CR><LF>	Unlock touchscreen.
LIMU=[VALUE]	LIMU=22.2<CR><LF>	Set upper limit.
LIMU?	LIMU=22.2<CR><LF>	Query upper limit.
ABS1	ABS1<CR><LF>	Change to absolute mode. ! BaroRef has to be installed!
ABS0	ABS0<CR><LF>	Change to gauge mode. ! BaroRef has to be installed!
ABS?	ABS?<CR><LF>	Query pressure mode; if -1, no barometer installed.
DIG=	DIG=1<CR><LF>	Set decimal places (0...5).
DIG?	DIG?<CR><LF>	Query decimal places.
ID?	D?<CR><LF>	Send the system ID and configuration. Output format: SN; Range 1; Range 2; Range 3; BaroRef; Options

OPT?	OPT?<CR><LF>	List the installed options. Output format: option 1; option 2; option 3; option 4 e.g.: O1;False;False;False<CR><LF>
PIDIN=	PIDIN=P;I;D;C<CR><LF>	Change the PID setting for the inlet valve. ! Caution, this command will change the control behaviour of the instrument. Write down the factory values from the regulation menu!
PIDOUT=	PIDOUT=P;I;D;C<CR><LF>	Change the PID setting for the outlet valve. ! Caution, this command will change the control behaviour of the instrument. Write down the factory values from the regulation menu!
LANG=	LANG=1<CR><LF>	Changes the menu language: 1 = German 2 = English 3 = Russian 4 = Italian
LANG?	LANG?<CR><LF>	Query the active language.
CONTROL0 **CONTROL1** **CONTROL2**		This command will set the controller to Vent. This command will set the controller to Regulation. This command will set the controller to Measure.
CONTROL?		Gives the current mode back, i.e. CONTROL2 if the regulator is active
CONTROLMODE=	CONTROLMODE=FAST CONTROLMODE=NORMAL CONTROLMODE=PRECISE CONTROLMODE=CUSTOM	This command will set the controller into Fast Mode. This command will set the controller into Normal Mode. This command will set the controller into Precise Mode. This command will set the controller into Custom Mode.
CONTROLMODE=?		This command will send the active mode back, i.e. if the controller is in Precise Mode the controller will send CONTROLMODE=PRECISE

DPC 3800 remote communication example 1:

Available output formats for the **N[value] command** Possible values for output are N0 ... N99, if no other output format is available, the instrument will use the N0 Format when "?<CR><LF>" is sent.

ACTUAL VALUE; DESIRED VALUE; STABLE <CR><LF>

If the output format is set to N10. The DPC 3800 will send the following after sending:

Send: ?<CR><LF>

Answer string:

ACTUAL_VALUE; DESIRED_VALUE; STABLE_STATUS; STABLE_TIME; DEAD_BAND; CONTROL_ON/OFF; VENT_OPEN/CLOSED; ABS_REL; TARE_AN/AUS; AKTIVE_PRESSURERANGE; PRESSURE_UNIT; BAROREF; OVERPESSURE_SHUTOFF; DRIVER_STATUS <CR><LF>

Description:

1. ACTUAL_VALUE:
   Pressure value in the active pressure unit.

2. DESIRED_VALUE:
   Pressure point set with the P=[value] command in active unit.

3. STABLE_STATUS:
   When the stable criteria defined with DEAD_BAND is reached, STABLE_STATUS is 1, otherwise 0.

4. STABLE_TIME:
   Elapsed time (in ms) since the controller reached DEAD_BAND criteria (STABLE_STATUS=1). After 60,000 ms (1 minute), the time starts from zero again.

5. DEAD_BAND:
   Window [± value in bar] around the set value in which the set pressure point is reached close enough to take a reading.

6. CONTROL_ON/OFF:
   1 if the controller is active, 0 if the controller is turned off.

7. VENT_OPEN/CLOSED:
   1 if the pressure system is open to environment, 0 closed.

8. ABSOLUT_GAUGE:
   1 for absolute pressure mode, 0 for gauge pressure mode.

9. TARE_ON/OFF:
   When vented, all sensors in gauge mode are set to 0.

10. AKTIVE_PRESSURERANGE:
    0 for Auto, 1 highest, 2 middle, 3 lowest pressure range.

11. PRESSURE_UNIT:
    Pressure unit ID number.

12. BAROREF:
    Pressure reading of the barometric reference in active unit. If no barometer is installed, the value will be -1.

13. OVERPESSURE_SHUTOFF:
    Pressure value in bar when the controller will vent for protection.

14. DRIVER _STATUS:
    Byte value indicating the 24 V driver status.

DPC 3800 remote communication example 2:

If the output format is set to N11. The DPC 3800 will send the following after sending:

?<CR><LF>

ACTUAL_VALUE; DESIRED_VALUE; STABLE_STATUS; STABLE_TIME; DEAD_BAND; REGLER_AN/AUS; VENT_OPEN/CLOSED; ABS_REL; TARE_ON/OFF; AKTIVE_PRESSURERANGE; RESSURE_UNIT; BAROREF; OVERPESSURE_SHUTOFF; DRIVER_STATUS; PRESSURE_RATE<CR><LF>

Description:

1. ACTUAL_VALUE:
   Pressure value in the active pressure unit.

2. DESIRED_VALUE:
   Pressure point set with the P=[value] command in active unit.

3. STABLE_STATUS:
   When the stable criteria defined with DEAD_BAND is reached, STABLE_STATUS is 1 otherwise 0.

4. STABLE_TIME:
   Elapsed time (in ms) since the controller reached DEAD_BAND criteria (STABLE_STATUS=1). After 60,000 ms (1 minute), the time starts from zero again.

5. DEAD_BAND:
   Window [± value in bar] around the set value in which the set pressure point is reached close enough to take a reading.

6. CONTROL_ON/OFF:
   If 1, then the controller is active, 0 if the controller is turned off.

7. VENT_OPEN/CLOSED:
   If 1, then the pressure system is open to environment, 0 closed.

8. ABSOLUT_GAUGE:
   1 for absolute pressure mode, 0 for gauge pressure mode.

9. TARE_ON/OFF:
   When vented, all sensors in gauge mode are set to zero.

10. AKTIVE_PRESSURERANGE:
    0 for Auto, 1 highest, 2 middle, 3 lowest pressure range.

11. PRESSURE_UNIT:
    Pressure unit ID number.

12. BAROREF:
    Pressure reading of the barometric reference in active unit. If no barometer is installed, the value will be -1.

13. OVERPESSURE_SHUTOFF:
    Pressure value in bar when the controller will vent for protection.

14. DRIVER _STATUS:
    Byte value indicating the 24 V driver status.

15. PRESSURE_RATE:
    Pressure change rate.

18. Declaration of Conformity

EU-Konformitätserklärung

EU Declaration of Conformity

Für die nachfolgend bezeichneten Erzeugnisse

Digitales Präzisions-Druckmessgerät
Typen DPG 3600, DPG 3600 HD
Präzisions-Druckkalibrator
Typen DPC 3800, DPC 3800 HD, DPC 3800 HDG, DPC 4800 A, DPC 4800 A+, DPC 4800 P

We hereby declare for the following named goods

Digital Precision Pressure Indicator
Models DPG 3600, DPG 3600 HD
Precision Pressure Controller
Models DPC 3800, DPC 3800 HD, DPC 3800 HDG, DPC 4800 A, DPC 4800 A+, DPC 4800 P

wird hiermit erklärt, dass sie den wesentlichen Schutzanforderungen entsprechen, die in nachfolgend bezeichneten Richtlinien festgelegt sind:

that they meet the essential protective requirements, which have been fixed in the following directives:

RICHTLINIE 2014/30/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 26. Februar 2014
zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit – kurz: **EMV-Richtlinie**

DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND THE COUNCIL from February 26, 2014
on the approximation of the laws of the Member States relating to the electromagnetic compatibility – short: ***EMC Directive***

RICHTLINIE 2014/35/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 26. Februar 2014
zur Angleichung der Rechtsvorschriften der Mitgliedstaaten betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen – kurz: **Niederspannungsrichtlinie**

DIRECTIVE 2014/35/EU OF THE EUROPEAN PARLIAMENT AND THE COUNCIL from February 26, 2014
on the approximation of the laws of the Member States relating to electrical equipment designed for the use within certain voltage limits – short: ***Low Voltage Directive***

RICHTLINIE 2011/65/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 8. Juni 2011
zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten – kurz: **RoHS-Richtlinie**

DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND THE COUNCIL from June 8, 2011
on the restriction of the use of certain hazardous substances in electrical and electronic equipment – short: ***RoHS Directive***

Zur Beurteilung des Erzeugnisses hinsichtlich der Richtlinien wurden folgende Normen herangezogen:

The following standards have been used to assess the goods regarding the directives:

Norm: *Standard:*	Richtlinienbezug *Reference to directive*
EN 61326-1: 2013-07	**EMV-Richtlinie 2014/30/EU** ***EMC Directive 2014/30/EU***
EN 61010-1: 2011-07	**Niederspannungsrichtlinie 2014/35/EU** ***Low Voltage Directive 2014/35/EU***
DIN EN 50581:2020-03	**RoHS-Richtlinie 2011/65/EU** ***RoHS Directive 2011/65/EU***

Diese Erklärung gilt für alle nach Datenblätter 10261, 10262, 10461, 10462, 10463 und 10465 hergestellten Exemplare.

This declaration applies to any specimen manufactured according to the data sheets 10261, 10262, 10461, 10462, 10463 and 10465.

Diese Erklärung wird verantwortlich für den Hersteller:
This declaration is issued under the sole responsibility of the manufacturer:

ARMANO Messtechnik GmbH
abgegeben durch / *by*
Grünhain-Beierfeld, 2021-05-03

Bernd Vetter
Geschäftsführender Gesellschafter / *Managing Director*

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086 EU-Konformitätserklärung DPG, DPC Ausg. 05/21

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