



Contents

1.	Information on This Operating Instruction	1
1.1	Pictographs Used	2
1.2	Exclusion of Liability	2
1.3	General Information	2
2.	Safety Instructions	2
3.	Device Description	3
4.	Technical Data	4
4.1	Wiring Diagrams	4
4.2	Supply Voltage	4
4.3	Pin Assignment	5
5.	Installation	5
6.	Operation	6
7.	Maintenance / Cleaning, Storage and Transport	10
8.	Dismounting and Disposal	10
9.	CE Conformity	10
10.	Annex: Menu System	11
11.	Declaration of Conformity	12

1. Information on This Operating Instruction

- 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 2 "Safety Instructions".

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



ARMANO Messtechnik GmbH Location Beierfeld

Am Gewerbepark 9 • 08344 Grünhain-Beierfeld
Tel.: +49 3774 58 – 0 • Fax: +49 3774 58 – 545
mail@armano-beierfeld.com

Location Wesel

Manometerstraße 5 • 46487 Wesel-Ginderich
Tel.: +49 2803 9130 – 0 • Fax: +49 2803 1035
mail@armano-wesel.com

1.1 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.



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.

1.2 Exclusion of Liability

We accept no liability for any damage or malfunction resulting from incorrect installation, inappropriate use of the device or failure to follow the instructions in this manual.

1.3 General Information

Please inspect the transport packaging and the delivered items immediately upon their receipt to determine their integrity and completeness.

The following manual was composed with due care. It is not possible, however, to take into account all versions and possible cases of application in this operating instruction. If you have any questions regarding a special application, instruments, storage, mounting, operation or difficulties, please contact us as manufacturer or the distributor.

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

2. Safety Instructions

Please read this operating instruction thoroughly before installing the device.

Disregarding the containing warnings, especially the safety instructions, may result in danger for people, the environment, and the device and the system it is connected to.

The device corresponds with the state of engineering at the time of printing. This concerns the accuracy, the operating mode and the safe operation of the device. In order to guarantee that the device operates safely, the operator must act competently and be conscious of safety issues.

The ARMANO Messtechnik GmbH provides support for the use of its products either personally or via relevant literature. The customer verifies that our product is fit for purpose based on our technical information. The customer performs customer and application specific tests to ensure that the product is suitable for the intended use. With this verification, all hazards and risks are transferred to our customers. Our warranty expires in case of inappropriate use.

Qualified personnel:

- The personnel that is charged for the installation, operation and maintenance of the instrument must hold a relevant qualification. This can be based on training or relevant tuition. The personnel must be aware of this manual and have access to it at all times.
- The electrical connection shall be carried out by a fully qualified electrician only.

Operating Instructions

Digital Display and Switching Module DAS/DASA

General safety instructions:

- You have purchased an electronic precision measuring instrument. Please handle the device with care to ensure that no damage is caused to the plastic surface and case parts.
- The display and the plastic housing are provided with a rotational limiter. Do not try to overtighten the display or housing by using force. This might damage the rotation mechanism and tear off the connection cables.
- In all work, the existing national regulations for accident prevention and safety at the workplace must be complied with. Any internal regulations of the operator must also be complied with, even if these are not mentioned in this manual.
- Please regard relevant national and international safety instructions.
- All works must take place in a de-energised state.
- The instruments are not of the pressure sustaining type with a safety function in the sense of PED 2014/68/EU.
- Use the instrument in its perfect technical condition only. Damaged or defective instruments need to be checked immediately and replaced if necessary.
- In case of visible damage (e.g. leaking liquids) or malfunctions, the instrument must be put out of operation immediately and the installation and commissioning must not take place! Only use intact, faultless instruments!
- Only use appropriate tools for mounting, connecting and dismantling the device.
- Nameplates or other information on the device shall neither be removed nor obliterated, since otherwise any warranty and manufacturer responsibility expires.



IMPORTANT! Disregarding the respective regulations may result in severe personal injuries and/or property damage.

Special safety instructions:

Warnings, which are specifically relevant to individual operating procedures or activities, are to be found at the beginning of the relevant sections of this operating instruction.

3. Device Description

This manual applies to digital display and switching modules

- Model DAS (firmly mounted)
- Model DASA (attachable)

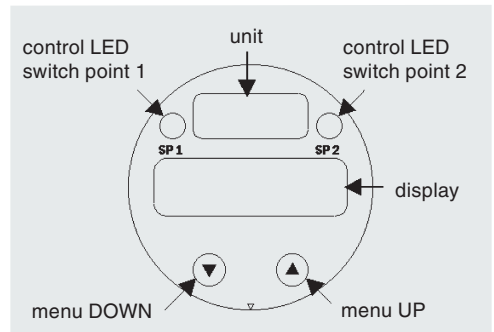
Upon request, the digital display and switching modules DAS and DASA can be mounted onto pressure transmitters if the following conditions are met:

- DAS output signal of the transmitter
4...20 mA, 2-wire or 0...10 V / 3-wire
- DASA output signal of the transmitter
4...20 mA, 2-wire

For information on our pressure transmitters please refer to data sheets 9810 ff.

When designing the DAS/DASA display and switching module, particular emphasis was placed on simple operation and user guidance. The individual functions can be set via a self-contained menu system using two miniature pushbuttons arranged on the front. The settings are permanently stored in a Flash-E²PROM and can be protected against unauthorised manipulation by an access code. The measured values and the individual menus are displayed via a 4-digit seven-segment display with a digit height of 7.62 mm. It is possible to rotate the display and housing in order to obtain ideal visibility of the display even in unusual installation positions.

Arrangement of the operating and display elements



Operating Instructions

Digital Display and Switching Module DAS/DASA

Unit

The unit of the displayed measured value is determined by the ordered pressure range. However, it is also possible to subsequently label the instrument with another unit by attaching one of the enclosed unit labels.

Indication of the switching function

For the indication of the active switching output, the devices are equipped with a green LED for switch point 1 and a yellow LED for switch point 2 (DAS only). If the respective LED lights up, the switch point has been reached and the switching output is active.

Indication of the measured values and of the settings menu

Below the LED is the 4-digit display for depicting the measured value and for supporting the configuration. The depiction of the measured value depends on the selected settings and the scaling in the unit defined by the user.

Control elements for the setting

The operation is carried out via two miniature pushbuttons (control keys), which are covered by a membrane.

Button ▲ forward movement in the menu system or increase of values

Button ▼ backward movement in the menu system or decrease of values

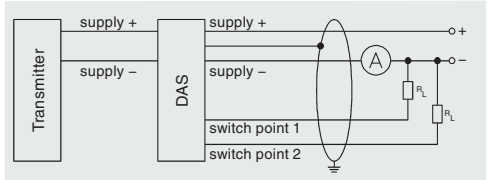
⇒ chapter 6 "Operation"

4. Technical Data

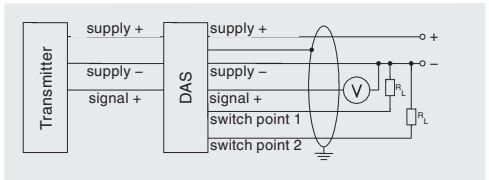
4.1 Wiring Diagrams

2 switching outputs (DAS only)

2-wire system

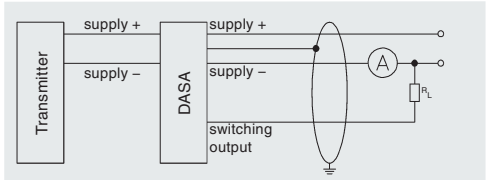


3-wire system



1 switching output (DASA only)

2-wire system



4.2 Supply Voltage

2-wire system

$$U_B = (U_{M\min} \dots U_{M\max}) + 6 \text{ VDC}$$

for PTM: 16...46 VDC

for DTM: 15...36 VDC

3-wire system

$$U_{B\min} = 8 \text{ VDC} \dots U_{M\min}; U_{B\max} = U_{M\max} \dots 36 \text{ VDC}$$

for PTM: 16...28 VDC

for DTM: 14...30 VDC

4.3 Pin Assignment

	Electrical Connections			
	M 12x1 (5-pin) ¹⁾ (plastic version)	M 12x1 (5-pin) ¹⁾ (metal version)	Cable colours ¹⁾	DIN EN 175 301-803
2-wire system				
Supply +	1	1	white	1
Supply –	3	3	brown	2
Switch point 1	4	4	grey	3
Switch point 2	5	5	pink	
Ground	via pressure connection	plug housing	cable shield	earth contact
3-wire system				
Supply +	1	1		
Supply –	3	3		
Signal +	2	2		
Switch point 1	4	4		
Switch point 2	5	5		
Ground	via pressure connection	plug housing		

5. Installation

DAS

- Carefully remove the pressure transmitter with the digital display and switching module from the packaging.
- Mount the transmitter to the measuring point, also following the instructions given in the operating instruction of the transmitter.
- Loosen the cable box from the digital display and remove it.
- Connect the cable box according to the pin assignment table (⇒ chapter 4.2) and the wiring diagrams.
- Replace the cable box onto the display and tighten it hand-tight.

DASA

- Carefully remove the pressure transmitter and the attachable display from the packaging.
- Mount the transmitter to the measuring point, also following the instructions given in the operating instruction of the transmitter.
 - Loosen the cable box from the pressure transmitter and remove it.
 - Plug the attachable display onto the pressure transmitter, making sure that the profile packing pre-mounted on the bottom is seated correctly.
- Loosen the cable box from the digital display and remove it.
- Connect the cable box according to the pin assignment table (⇒ chapter 4.2) and the wiring diagrams.
- Replace the cable box onto the display and tighten it hand-tight.
 - Insert the supplied stainless steel screws M3x84 through cable box and attachable display and tighten them with a screwdriver to the pressure transmitter.



The screw length was determined for a Hirschmann cable box type GDM 3009. If you use another cable box, ensure that an appropriate screw is used.

¹⁾ not for model DASA

6. Operation

The display and switching module can be adapted to the conditions of your application using the menu.

In the following section, you will find a list of setting and correction options.

The menu system is depicted in chapter 10 "Annex".

The operation is carried out via two miniature pushbuttons (control keys), which are covered by a membrane.

Button ▲ forward movement in the menu system or increase of values

Button ▼ backward movement in the menu system or decrease of values

The menu system is a closed system allowing you to move both forward and backward to access the desired setting menu.

If the buttons are pressed for a longer time (>5 sec), the counting speed increases.

Press both control keys simultaneously to

- change between display and configuration mode
- save a set value
- return to display mode.



Changes to the set parameters (switch point, hysteresis, etc.) become effective after switching to the display mode (display of values).

Setting the access protection

Unlocked state



In the unlocked state (delivery state) settings can be made in all menu points.

To lock the keypad, press both control keys simultaneously in the menu shown and then enter the default password 5. In the display only the measured value and, after pressing both control keys, the menu point PA_{0n} appears.

Locked state



If access protection is active, the password must be entered after pressing the two control keys to make settings in the menu system.

Changing the access protection



To access the special functions offset adjustment, span adjustment, reset to default setting and password change, various codes have been assigned, which cannot be used as password (cf. Annex: Menu System)!

To change the password (default setting 5):

- Select the menu PA_{0F}.
- Press both control keys simultaneously.
- Enter the number 0835 by using the control keys (cursors). Setup appears in the display.
- Press both control keys simultaneously and enter a password within the range of 0...9999 by using the control keys (cursors).

To complete the setting, press both control keys simultaneously.

Setting the position of the decimal point



After pressing both control keys simultaneously in the menu shown, the position of the decimal point can be selected.

Select the position with the control keys ▲ or ▼.

To complete the setting, press both control keys simultaneously.

Setting the zero point



After pressing both control keys simultaneously in the menu shown, the zero point can be set.

The set value is indicated when the electrical output signal of the transmitter is 4 mA (zero point).

To complete the setting, press both control keys simultaneously.

Setting the end point

After pressing both control keys simultaneously in the menu shown, the end point can be set.

The set value is indicated when the electrical output signal of the transmitter is 20 mA (end point).

To complete the setting, press both control keys simultaneously.

Setting the damping (filter)

After pressing both control keys simultaneously in the menu shown, the interval for updating the displayed value can be set. The setting range is between 0.3 to 30 seconds.

To complete the setting, press both control keys simultaneously.

Activation of the limit error message

After pressing both control keys simultaneously in the menu shown, the alarm for exceeding or falling below the range of indication can be activated. The status can either be set to ON or to OFF.

To complete the setting, press both control keys simultaneously.

Setting the activation point for switching output 1

After pressing both control keys simultaneously in the menu shown, the value to activate switching output 1 can be set.

To complete the setting, press both control keys simultaneously.

Setting the deactivation point for switching output 1

After pressing both control keys simultaneously in the menu shown, the value to deactivate switching output 1 can be set.

To complete the setting, press both control keys simultaneously.

Setting the activation point for switching output 2 (model DAS only)

After pressing both control keys simultaneously in the menu shown, the value to activate switching output 2 can be set.

To complete the setting, press both control keys simultaneously.

Setting the deactivation point for switching output 2 (model DAS only)

After pressing both control keys simultaneously in the menu shown, the value to deactivate switching output 2 can be set.

To complete the setting, press both control keys simultaneously.

Hysteresis and comparison mode switch point 1

After pressing both control keys simultaneously in the menus shown, you can change between hysteresis mode (HY1) and comparison mode (CP1) of switching output 1.

To complete the setting, press both control keys simultaneously.

Hysteresis and comparison mode switch point 2 (model DAS only)

After pressing both control keys simultaneously in the menus shown, you can change between hysteresis mode (HY2) and comparison mode (CP2) of switching output 2.

To complete the setting, press both control keys simultaneously.

Setting the switch-on delay of switch point 1

After pressing both control keys simultaneously in the menu shown, the switch-on delay after reaching activation point 1 can be set. The adjustable range is between 0 to 100 seconds.

To complete the setting, press both control keys simultaneously.

Setting the switch-off delay of switch point 1

After pressing both control keys simultaneously in the menu shown, the switch-off delay after reaching deactivation point 1 can be set. The adjustable range is between 0 to 100 seconds.

To complete the setting, press both control keys simultaneously.

Setting the switch-on delay of switch point 2 (model DAS only)

After pressing both control keys simultaneously in the menu shown, the switch-on delay after reaching activation point 2 can be set. The adjustable range is between 0 to 100 seconds.

To complete the setting, press both control keys simultaneously.

Setting the switch-off delay of switch point 2 (model DAS only)

After pressing both control keys simultaneously in the menu shown, the switch-off delay after reaching deactivation point 2 can be set. The adjustable range is between 0 to 100 seconds.

To complete the setting, press both control keys simultaneously.

High pressure

After pressing both control keys simultaneously in the menu shown, the maximum pressure applied during measurement is indicated in the display. If both control keys are pressed again within one second, the stored value will be deleted.



Please note that the value will not remain stored if the power supply (current loop) is interrupted.

Low pressure

After pressing both control keys simultaneously in the menu shown, the minimum pressure applied during measurement is indicated in the display. If both control keys are pressed again within one second, the stored value will be deleted.



Please note that the value will not remain stored if the power supply (current loop) is interrupted.

Settings in the special menu

Span adjustment

Correction of the indication in case of deviation of the full scale of the pressure transmitter

Depending on the measuring range of the pressure transmitter, a pressure reference is required!

During the service life of a transmitter, a shift of the full scale (FS), nominal value 20 000 mA, may occur. Resulting from this, the DAS/DASA might indicate a signal value deviating from the set upper range limit.

The DAS/DASA control software includes a function for adjusting this indication:

- Select the menu PAoF.
- Press both control keys simultaneously.
- Enter 0238 to select the special function.
- Press both control keys simultaneously again.

Operating Instructions

Digital Display and Switching Module DAS/DASA

The following pattern appears in the display:



- Pressurise the transmitter using a pressure reference. The pressure must correspond to the upper range value.
- By pressing both control keys simultaneously, the signal being emitted from the transmitter will be stored as full scale signal.

The display will then show the set upper range value (end point), although the sensor signal in the full scale signal is shifted.



Please note that the output signal remains unaffected by this change!

Offset adjustment

Zero setting of the indication in case of offset deviation of the pressure transmitter

Depending on the measuring range of the pressure transmitter, a pressure reference is required!

During the service life of a transmitter, a shift of the offset, nominal value 4 000 mA, may occur. Resulting from this, the DAS/DASA might indicate a signal value deviating from the set lower range value.

The DAS/DASA control software includes a function for adjusting this indication:

- Select the menu PAof.
- Press both control keys simultaneously.
- Enter 0247 to select the special function.
- Press both control keys simultaneously again.

The following pattern appears in the display:



- Pressurise the transmitter using a pressure reference. The pressure must correspond to the lower range value.
- By pressing both control keys simultaneously, the signal being emitted from the transmitter will be stored as offset.

The display will then show the set lower range value (zero point), although the sensor signal in the offset is shifted.



Please note that the output signal remains unaffected by this change!

When shifting the offset, the span value (full scale) will also be shifted.

Restoring the default setting (load defaults)

The DAS/DASA control software contains an option to restore the default settings.

This can be used to undo previous changes to offset and span adjustment.



When restoring the default settings, all changes of settings that were made, including the access code, will be deleted and must be reset if necessary.

- Select the menu PAof to restore the default settings.
- Press both control keys simultaneously.
- Enter 0729 to select the special function.
- Press both control keys simultaneously again.

The following pattern appears in the display:



- By pressing both control keys simultaneously, the default settings then become effective.

Operating Instructions

Digital Display and Switching Module DAS/DASA

7. Maintenance / Cleaning, Storage and Transport



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.

Maintenance:

The instruments are maintenance-free.

To ensure measurement accuracy, we recommend checking the instruments regularly (once or twice a year). For this, the instrument must be separated from the process and checked by using a pressure test device.

The instrument cannot be repaired by the operator. In case of faults, which cannot be eliminated without interference in the device, please return the instrument to the manufacturer for repair, together with a precise description of the faults. Any arising repairs may only be executed by the manufacturer.

Cleaning:

- Clean the device with a dry or slightly dampened lint-free cloth.
- Before cleaning the interior of connector or cable box, they must be de-energised.
- Before switching the instrument on again, please make sure that all parts have properly dried.
- Do not use any sharp objects or aggressive agents for cleaning.

Storage and transport:

- Use the original packaging or comparable packaging for storage/transport.
- Avoid impacts or strong vibrations.
- Protect the device against damage caused by external influences.
- During storage, the specified temperature limits must not be exceeded.

8. 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.

Dismounting:

For decommissioning, completely remove the instrument from its area of use. Proceed in reverse order of the mounting instructions (⇒ chapter 5 "Installation"). The dismounting of the pressure transmitter with DAS must only be carried out with depressurised line!

Disposal:



NO DOMESTIC WASTE!

The device comprises various materials. It shall not be disposed of together with domestic waste.

→ Bring the device to your local recycling plant

or

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

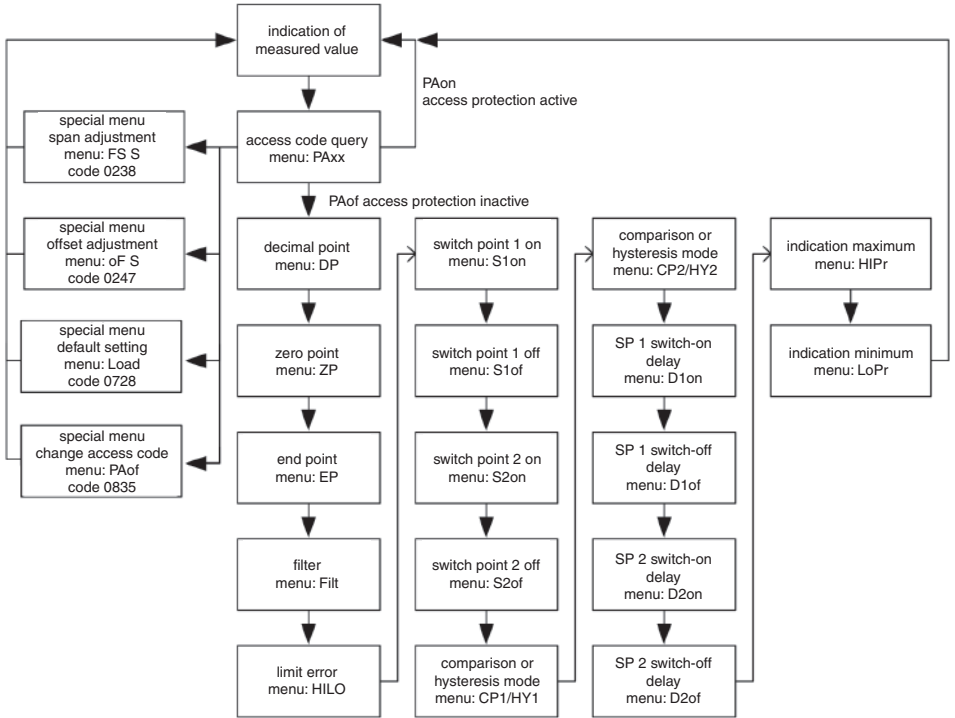
9. CE Conformity



The CE marking of the instruments certifies the conformity with prevailing EU directives for placing products on the market within the European Community. The following directive applies:

2014/30/EU (EMC)

10. Annex: Menu System



Information concerning switch point 2 (S2) and comparison or hysteresis mode CP2/HY2 apply to model DAS only.

11. Declaration of Conformity

EU-Konformitätserklärung

EU Declaration of Conformity

Für die nachfolgend bezeichneten Erzeugnisse

We hereby declare for the following named goods

DIGITALES ANZEIGE UND SCHALTMODUL
Typ DAS/DASA

DIGITAL DISPLAY AND SWITCHING MODULE
Model DAS/DASA

wird hiermit bestätigt, dass sie den wesentlichen Schutzanforderungen entsprechen, die in der Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit (2014/30/EU) festgelegt sind.

that they meet the essential protective requirements, which have been fixed in the Directive of the European Parliament and the Council on the approximation of the laws of the Member States relating to the electromagnetic compatibility (2014/30/EU).

Diese Erklärung gilt für alle Exemplare, die nach dem anhängenden Datenblatt 9912 - welches Bestandteil dieser Erklärung ist - hergestellt werden.

This declaration applies to any specimen manufactured according to the attached data sheet 9912, which is part of this declaration.

Zur Beurteilung der Erzeugnisse hinsichtlich elektromagnetischer Verträglichkeit wurden folgende Normen herangezogen:

The following standards have been used to assess the goods regarding their electromagnetic compatibility:

DIN EN 61326-1:2013-07

059 EU-Konformitätserklärung DAS_DASA_Ausg. 04/21

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, 2021-04-14

Bernd Vetter
Geschäftsführender Gesellschafter / Managing Director

ARMANO

ARMANO Messtechnik GmbH

Standort Beierfeld

Am Gewerbehark 9
08344 Grünhain-Beierfeld
Tel.: +49 3774 58 - 0
Fax: +49 3774 58 - 545
mail@armano-beierfeld.com

Standort Wesel

Manometerstraße 5
46487 Wesel-Ginderich
Tel.: +49 2803 9130 - 0
Fax: +49 2803 1035
mail@armano-wesel.com

www.armano-messtechnik.de