

DAS/DASA Digital Display and Switching Module User Instructions

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1. General Instructions

This operating manual applies to the following digital display and switching modules:

- DAS models (fixed);
- DASA models (attachable).

Read this operating manual carefully before starting up the digital display and switching module.

DAS and DASA digital display and switching modules may be mounted on pressure transmitters upon request, if the conditions below are met:

- DAS: Transmitters output signal 4...20 mA, two-wire or 0 ... 10 V / three-wire
- DASA: Transmitters output signal 4...20 mA, two-wire

For information on our pressure transmitters refer to the data sheets 9810 et seq.

ARMATURENBAU GmbH and MANOTHERM Beierfeld GmbH will not be liable for any loss or damage caused by improper use of the instrument or failure to follow the instructions given in this operating manual.

2. Safety Instructions



It is imperative to follow applicable local safety regulations for assembly, start-up and operation.

The instruments may only be installed, used and serviced by persons who are familiar with this operating manual as well as with applicable rules and regulations on safety at work and accident prevention.

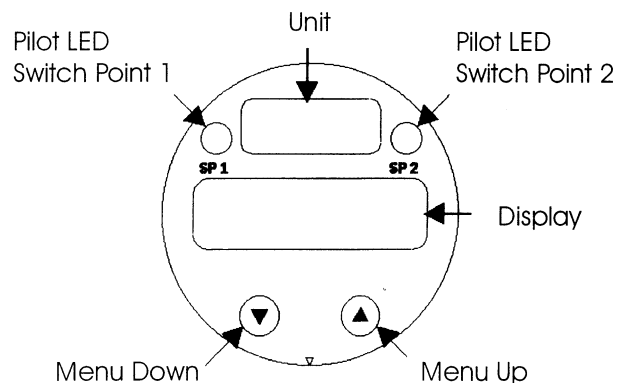
Failure to observe relevant rules and regulations may lead to severe personal injuries and/or property damage.

- You have purchased an electronic precision measuring instrument. Treat the instrument with care to ensure that no damage is caused to the plastic surface and casing parts.
- The display and the plastic casing are provided with a turn stop mechanism. Do not try to overtighten the display or casing by using force. This could damage the turning mechanism and tear the connection lines off.

3. Description, Use

The main aspects to which importance was attached in designing the DAS/ DASA display and switching module were easy operation and user guidance. Individual functions may be set via a self-contained menu system using two miniature pushbuttons arranged at the front. Settings are permanently stored in flash EPROM and may be secured against unauthorised manipulation by an access code. Measured values and individual menus are displayed using a four-digit seven-segment display, digit height 7.62 mm. The display and casing may be turned to ensure that the display is best visible even if installed in unusual positions.

Arrangement of Operating and Display Elements



Unit of Measurement

The unit of the measured value shown is determined by the pressure range as ordered. However, you can mark the instrument with another unit later by affixing one of the enclosed unit labels.

Display of Switch Function

To indicate the active switching output, the instruments are provided with a green LED for Switch Point 1, and (DAS only) with a yellow LED for Switch Point 2. If the respective LED is lit, the switching point has been reached and the switching output is active.



ARMATURENBAU GmbH

Manometerstraße 5 • D-46487 Wesel - Ginderich
Phone: +49 (28 03) 91 30-0 • Fax: +49 (28 03) 10 35
armaturenbau.com • mail@armaturenbau.com



Subsidiary Company and Sales East Germany and Eastern Europe

MANOTHERM Beierfeld GmbH

Am Gewerbepark 9 • D-08340 Beierfeld
Phone: +49 (37 74) 58-0 • Fax: +49 (37 74) 58-545
manotherm.com • mail@manotherm.com

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Display of Measured Values and of the Settings Menu

Arranged under the LED is a four-digit display whose purpose is to show the measured value and to support configuration. The representation of the measured value depends on the settings selected and the scaling within the unit of measurement defined by the user.

Controls for Setting

For operation use the two miniature pushbuttons (control buttons), which are arranged under a film.

- ▲ Button Move forward in the menu system or increase values
- ▼ Button Move back in the menu system or reduce values

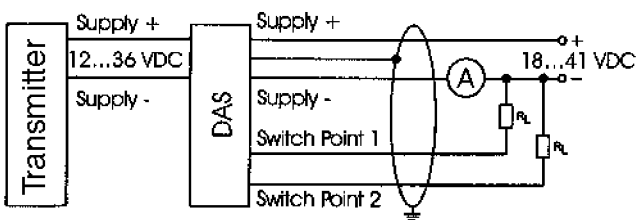
See also Item 6, "Operation".

4. Technical Data

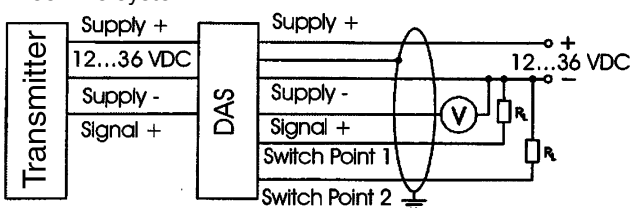
Wiring Diagrams

2 switching outputs (DAS only)

Two-wire system

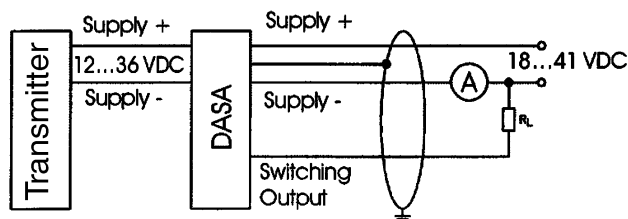


Three-wire system



1 switching output (DASA only)

Two-wire system



Refer to the Appendix (page 7) for a terminal assignment table for wiring.

5. Installation

Storage and Transport

- Admissible storage temperature: -40...+60°C
- The DAS and the pressure transmitter must be protected against mechanical damage during transport and storage. Keep them in the original packing until using them.
- The packing material may be disposed of as recovered paper. Ensure adequate protection of the instrument against damage in case of further transport or return transport.

Assembly

DAS

1. Carefully remove the pressure transmitter with the digital display and switching module from the packing.
2. Mount the transmitter to the measuring point, following the instructions given in the operating manual of the transmitter as you do so.
3. Release the cable socket from the digital display and pull it off.
4. Connect the cable socket according to the terminal assignment table (Appendix, page 6) and wiring diagrams.
5. Put the cable socket back on the display and hand-screw to tighten it.

DASA

1. Carefully remove the pressure transmitter and the attachable display from the packing.
2. Mount transmitter to the measuring point, following the instructions given in the operating manual of the transmitter as you do so.
 - 2.1 Release the cable socket from the pressure transmitter and pull it off.
 - 2.2 Put the attachable display on the pressure transmitter, making sure that the profile packing pre-mounted to the bottom side fits properly.
3. Release the cable socket from the digital display and pull it off.
4. Connect the cable socket according to the terminal assignment table (Appendix, page 6) and wiring diagrams.
5. Put the cable socket back on the display and hand-screw to tighten it.
 - 5.1 Put the supplied M3x84 stainless steel screws through the cable socket and attachable display and fasten them to the pressure transmitter with a screwdriver.



The length of the screws was determined for a Hirschmann cable socket, model GDM 3009. If the cable socket is different, use a suitable different type of screw, if appropriate.



ARMATURENBAU GmbH

Manometerstraße 5 • D-46487 Wesel - Ginderich
Phone: +49 (28 03) 9130-0 • Fax: +49 (28 03) 1035
armaturenbau.com • mail@armaturenbau.com



Subsidiary Company and Sales East Germany and Eastern Europe

MANOTHERM Beierfeld GmbH

Am Gewerbepark 9 • D-08340 Beierfeld
Phone: +49 (37 74) 58-0 • Fax: +49 (37 74) 58-545
manotherm.com • mail@manotherm.com

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6. Operation

The menu allows you to suit the display and switching module to the conditions of use you need.

What follows is an overview of options to make settings and corrections.

The menu system is shown in the Appendix (p. 6).

For operation use the two miniature pushbuttons (control buttons), which are arranged under a film.

- ▲ Button Move forward in the menu system or increase values
- ▼ Button Move back in the menu system or reduce values

The menu system is self-contained, that is, you can move both forward and back in order to go to the settings menu you need.

Pressing the buttons for a longer time (more than 5 seconds) will increase counting speed.

Pressing the two control buttons simultaneously will

- switch from display mode to configuration mode;
- save a value which has been set; or
- take you back to the display mode.



Changes of set parameters (switch point, hysteresis, etc.) will not become effective until you switch to the display mode (display of values).

Setting the Access Protection—Unlocked State

The unlocked state (which the instrument is in when supplied) allows you to make settings under all menu items.

To lock the buttons, press the two control buttons simultaneously in the menu shown and then enter the default code 5. The display will only show the measured value and, after you press the two control buttons, the menu item "PAon".

Locked State

To make settings in the menu system while access protection is enabled, press the two control buttons and then enter the code.

Changing the Access code



To invoke the special functions for adjusting offset and full scale, restoring the factory default settings and changing the code, different codes have already been assigned and may not be used, confer Appendix, Menu System.

To change the code (factory default is 5):

- Select the **PAof** menu.
- Press the two control buttons simultaneously.
- Enter the number 0835 using the control buttons (cursor). The display will show "Setup".
- Press the two control buttons simultaneously and, using the control buttons (cursor), set a code within the range of 0...9999.

Press the two control buttons simultaneously to finish setting up.

Setting the Position of the Decimal Point

After simultaneously pressing the two control buttons in the menu shown you can set the position of the decimal point. Use the control buttons "▲" or "▼" to select the position.

Press the two control buttons simultaneously to finish setting up.

Setting the Zeropoint

After simultaneously pressing the two control buttons in the menu shown you can set the zeropoint. The set value will be shown when the electrical output signal of the transmitter is equal to 4 mA (zeropoint).

Press the two control buttons simultaneously to finish setting up.

Setting the Endpoint

After simultaneously pressing the two control buttons in the menu shown you can set the endpoint position of the decimal point. The set value will be shown if the electrical output signal of the transmitter is equal to 20 mA (endpoint).

Press the two control buttons simultaneously to finish setting up.



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MANOTHERM Beierfeld GmbH

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manotherm.com • mail@manotherm.com

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After simultaneously pressing the two control buttons in the menu shown you can set the value starting from which Switching Output 2 is activated.

Press the two control buttons simultaneously to finish setting up.

Setting the Switching Point 2 Deactivation Point (DAS Models Only)

After simultaneously pressing the two control buttons in the menu shown you can set the value starting from which Switching Output 2 is deactivated.

Press the two control buttons simultaneously to finish setting up.

Switching Point 1 Hysteresis Mode and Compare Mode

After simultaneously pressing the two control buttons in the menus shown you can change between the Hysteresis Mode (HY 1) and the Compare Mode (CP 1) of Switching Output 1.

Press the two control buttons simultaneously to finish setting up.

Switching Point 2 Hysteresis Mode and Compare Mode (DAS Models Only)

After simultaneously pressing the two control buttons in the menus shown you can change between the Hysteresis Mode (HY 2) and the Compare Mode (CP 2) of Switching Output 2.

Press the two control buttons simultaneously to finish setting up.

Setting the Turn-on Delay for Switching Point 1

After simultaneously pressing the two control buttons in the menu shown you can set the turn-on delay after activation point 1 is reached.

The setting range is from 0 to 100 seconds.

Setting Damping (Filter)

After simultaneously pressing the two control buttons in the menu shown you can set the time it takes to refresh the value displayed. The setting range is from 0.3 to 30 seconds.

Press the two control buttons simultaneously to finish setting up.

Enabling the Limit Error Message

After simultaneously pressing the two control buttons in the menu shown you can set the message indicating that a value exceeds or falls short of the range of indication. Only the states "ON" or "OFF" may be set.

Press the two control buttons simultaneously to finish setting up.

Setting the Switching Output 1 Activation Point

After simultaneously pressing the two control buttons in the menu shown you can set the value starting from which Switching Output 1 is activated.

Press the two control buttons simultaneously to finish setting up.

Setting the Switching Output 1 Deactivation Point

After simultaneously pressing the two control buttons in the menu shown you can set the value starting from which Switching Output 1 is deactivated.

Press the two control buttons simultaneously to finish setting up.

Setting the Switching Output 2 Activation Point (DAS Models Only)



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Press the two control buttons simultaneously to finish setting up.

Setting the Turn-off Delay for Switching Point 1

d 10F

After simultaneously pressing the two control buttons in the menu shown you can set the turn-off delay after deactivation point 1 is reached.

The setting range is from 0 to 100 seconds.

Press the two control buttons simultaneously to finish setting up.

Setting the Turn-on Delay for Switching Point 2 (DAS Models Only)

d2on

After simultaneously pressing the two control buttons in the menu shown you can set the turn-on delay after activation point 2 is reached.

The setting range is from 0 to 100 seconds.

Press the two control buttons simultaneously to finish setting up.

Setting the Turn-off Delay for Switching Point 2 (DAS Models Only)

d2oF

After simultaneously pressing the two control buttons in the menu shown you can set the turn-off delay after deactivation point 2 is reached.

The setting range is from 0 to 100 seconds.

Press the two control buttons simultaneously to finish setting up.

High Pressure

H 1P_r

To view the maximum pressure that was present during measuring press the two control buttons in the menu shown.

Pressing the two control buttons again within one second will delete the stored value.



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

Low Pressure

LoP_r

To view the minimum pressure that was present during measuring press the two control buttons in the menu shown.

Pressing the two control buttons again within one second will delete the stored value.



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

Settings in the Special Menu

a) Adjusting Full Scale

Correct the display in case of deviations of the pressure transmitter's full scale

A pressure reference is required depending on the pressure transmitter's measuring range.

In the course of a transmitter's service life, a shift in full scale (nominal value: 20.000 mA) may occur. This will result in a signal value deviating from the set endpoint of the measuring range being displayed by the DAS/DASA.

The DAS/DASA control software includes a function to adjust the display:

- Select the **PAof** menu.
- Press the two control buttons simultaneously.
- Set the number 0238 to select this special function.
- Press the two control buttons simultaneously again.

→ The display will show the readout below:

F5 5

- Using a pressure reference, pressurise the transmitter at a pressure equal to the endpoint of the measuring range.
- Pressing the two control buttons now will store the signal currently emitted by the transmitter as the full scale signal.

→ The display will show the set endpoint of the measuring range from that time, even though the sensor signal has shifted in the full scale signal.



The output signal will remain unaffected by this change.



ARMATURENBAU GmbH

Manometerstraße 5 • D-46487 Wesel - Ginderich
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b) Adjusting Offset

Calibrate the display to zero in case of a deviating offset of the pressure transmitter

A pressure reference is required depending on the pressure transmitter's measuring range.

In the course of a transmitter's service life, a shift in offset (nominal value: 4.000 mA) may occur. This will result in a signal value deviating from the zeropoint of the measuring range being displayed by the DAS/DASA.

The DAS/DASA control software includes a function to adjust the display:

- Select the **PAof** menu.
- Press the two control buttons simultaneously.
- Set the number 0247 to select this special function.
- Press the two control buttons simultaneously again.

→ The display will show the readout below:

- Using a pressure reference, pressurise the transmitter at a pressure equal to the zeropoint of the measuring range.
- Pressing the two control buttons now will store the signal currently emitted by the transmitter as the offset value.

→ The display will show the set zeropoint of the measuring range from that time, even though the sensor signal has shifted in the offset.



The output signal will remain unaffected by this change.



Shifting offset will simultaneously shift full scale as well.

c) Restoring the Factory Defaults (Load Defaults)

The DAS/DASA control software includes a function to restore the factory defaults.

It allows to undo changes previously made with regard to offset and full scale adjustment.



CAUTION: If the factory defaults are restored, all changes of settings that were made, including the access code, will be lost and must be made again, if appropriate.

- To restore the factory defaults select the **PAof** menu.
- Press the two control buttons simultaneously.
- Set the number 0729 to select this special function.
- Press the two control buttons simultaneously again.

→ The display will show the readout below:

- Pressing the two control buttons now will make the factory defaults effective again.

7. Maintenance, Repairs

The instruments are maintenance-free.

A moistened cloth is sufficient for cleaning.

Before re-starting the instrument make sure that all parts are completely dry again.

To ensure accuracy of measuring and switching functions we recommend to perform checks of the instruments at regular intervals. To do so, disconnect the instrument from the process and check it with a pressure tester.

If any fault occurs which cannot be remedied except by intervention in the instrument, send the instrument to us with a detailed description of faults.

Any repairs necessary may only be performed by the manufacturer.

To facilitate the processing of repairs for our customers, we request to co-ordinate all returns of instruments with our sales department in due time.

8. Putting out of Operation

To decommission the instrument, remove it from the area of use completely. To do so, follow the steps of the assembly instructions (p. 2) in reverse order.



Do not disassemble a pressure transmitter with the DAS unless the line is depressurised.

9. Waste Disposal



Please support all efforts to protect the environment by disposing of and recycling the materials used in accordance with applicable rules and regulations.

Subject to technical changes without notice.

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ARMATURENBAU GmbH

Manometerstraße 5 • D-46487 Wesel - Ginderich
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armaturenbau.com • mail@armaturenbau.com



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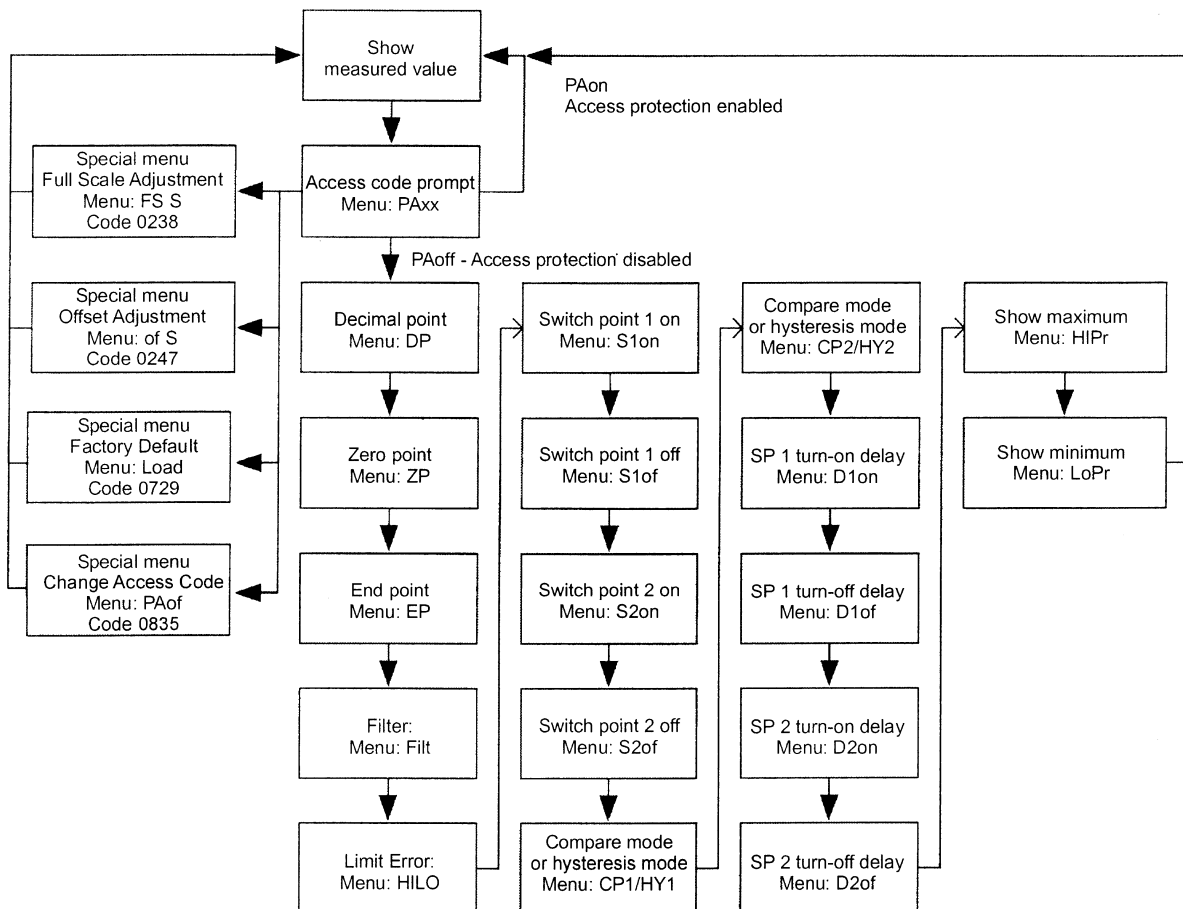
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Appendix: Terminal Assignment Table

Electrical Connections				
	M12x1 (5-pole) ¹⁾ (plastic design)	M12x1 (5-pole) ¹⁾ (metal design)	Cable colours ¹⁾	EN 175301-803
Two-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	
Earth	Via pressure port	Plug casing	Cable screen	Earth contact
Three-wire-system				
Supply +	1	1		
Supply -	3	3		
Signal +	2	2		
Switch point 1	4	4		
Switch point 2	5	5		
Earth	Via pressure port	Plug casing		

¹⁾ not for DASA models

Appendix: Menu System



The information on Switch Point 2 (S2) and on the Compare Mode or Hysteresis Mode CP2/HY2 applies to DAS models only.

