

# Brooks® LR-056

## Pressure Transducer Display

### Accurate, Miniature Plug-In Displays for Point-of-Use Pressure Monitoring



*LR-056 Pressure Transducer Display*

## Essential Instructions Read before proceeding!

Brooks Instrument designs, manufactures and tests its products to meet many national and international standards. These products must be properly installed, operated and maintained to ensure they continue to operate within their normal specifications. The following instructions must be adhered to and integrated into your safety program when installing, operating and maintaining Brooks Instrument products.

- To ensure proper performance, use qualified personnel to install, operate, update, program and maintain the product.
- Read all instructions prior to installing, operating and servicing the product. If this instruction manual is not the correct manual, please see back cover for local sales office contact information. Save this instruction manual for future reference.

**▲ WARNING: Do not operate this instrument in excess of the specifications listed in the Instruction and Operation Manual. Failure to heed this warning can result in serious personal injury and/or damage to the equipment.**

- If you do not understand any of the instructions, contact your Brooks Instrument representative for clarification.
- Follow all warnings, cautions and instructions marked on and supplied with the product.
- Install your equipment as specified in the installation instructions of the appropriate instruction manual and per applicable local and national codes. Connect all products to the proper electrical and pressure sources.
- Operation: (1) Slowly initiate flow into the system. Open process valves slowly to avoid flow surges. (2) Check for leaks around the flow meter inlet and outlet connections. If no leaks are present, bring the system up to the operating pressure.
- Please make sure that the process line pressure is removed prior to service. When replacement parts are required, ensure that qualified people use replacement parts specified by Brooks Instrument. Unauthorized parts and procedures can affect the product's performance and place the safe operation of your process at risk. Look-alike substitutions may result in fire, electrical hazards or improper operation.
- Ensure that all equipment doors are closed and protective covers are in place to prevent electrical shock and personal injury, except when maintenance is being performed by qualified persons.

**▲ WARNING: For liquid flow devices, if the inlet and outlet valves adjacent to the devices are to be closed for any reason, the devices must be completely drained. Failure to do so may result in thermal expansion of the liquid that can rupture the device and may cause personal injury.**

### European Pressure Equipment Directive (PED)

All pressure equipment with an internal pressure greater than 0.5 bar (g) and a size larger than 25mm or 1" (inch) falls under the Pressure Equipment Directive (PED).

- The Specifications Section of this manual contains instructions related to the PED directive.
- Meters described in this manual are in compliance with EN directive 97/23/EC.
- All Brooks Instrument Flowmeters fall under fluid group 1.
- Meters larger than 25mm or 1" (inch) are in compliance with PED category I, II or III.
- Meters of 25mm or 1" (inch) or smaller are Sound Engineering Practice (SEP).

### European Electromagnetic Compatibility (EMC)

The Brooks Instrument (electric/electronic) equipment bearing the CE mark has been successfully tested to the regulations of the Electro Magnetic Compatibility (2004/108/EC (EMC directive 89/336/EEC)).

Special attention however is required when selecting the signal cable to be used with CE marked equipment.

**Quality of the signal cable, cable glands and connectors:**

Brooks Instrument supplies high quality cable(s) which meets the specifications for CE certification.

If you provide your own signal cable you should use a cable which is overall completely screened with a 100% shield.

"D" or "Circular" type connectors used should be shielded with a metal shield. If applicable, metal cable glands must be used providing cable screen clamping.

The cable screen should be connected to the metal shell or gland and shielded at both ends over 360 Degrees.

The shield should be terminated to an earth ground.

Card Edge Connectors are standard non-metallic. The cables used must be screened with 100% shield to comply with CE certification.

The shield should be terminated to an earth ground.

For pin configuration : Please refer to the enclosed Instruction Manual.

### ESD (Electrostatic Discharge)

**▲ CAUTION: This instrument contains electronic components that are susceptible to damage by static electricity. Proper handling procedures must be observed during the removal, installation or other handling of internal circuit boards or devices.**

**Handling Procedure:**

1. Power to unit must be removed.
2. Personnel must be grounded, via a wrist strap or other safe, suitable means before any printed circuit card or other internal device is installed, removed or adjusted.
3. Printed circuit cards must be transported in a conductive container. Boards must not be removed from protective enclosure until immediately before installation. Removed boards must immediately be placed in protective container for transport, storage or return to factory.

**Comments**

This instrument is not unique in its content of ESD (electrostatic discharge) sensitive components. Most modern electronic designs contain components that utilize metal oxide technology (NMOS, SMOS, etc.). Experience has proven that even small amounts of static electricity can damage or destroy these devices. Damaged components, even though they appear to function properly, exhibit early failure.

## Installation and Operation Manual

X-PR-LR-056-PD-eng

Part Number: 541B171AAG

February, 2012

Brooks® LR-056

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Dear Customer,

We appreciate this opportunity to service your pressure measurement and control requirements with a Brooks Instrument device. Every day, customers all over the world turn to Brooks Instrument for solutions to their gas and liquid control applications. Brooks provides an array of flow, pressure and level measurement and control products for various industries from biopharmaceuticals, oil and gas, fuel cell research and chemicals, to medical devices, analytical instrumentation, semiconductor manufacturing, and more.

The Brooks product you have just received is of the highest quality available, offering superior performance, reliability and value to the user. It is designed with the ever changing process conditions, accuracy requirements and hostile process environments in mind to provide you with a lifetime of dependable service.

We recommend that you read this manual in its entirety. Should you require any additional information concerning Brooks products and services, please contact your local Brooks Sales and Service Office listed on the back cover of this manual or visit [www.BrooksInstrument.com](http://www.BrooksInstrument.com).

Yours sincerely,

Brooks Instrument

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## 1-1 Introduction

This manual covers the Brooks® LR-056 Pressure Transducer Display as shown in Figure 1-1 below. Included herein is general information, operating specifications, installation, operation, removal instructions and product warranty information.

The LR-056 provides a local display of process pressure which improves safety and quality control of gas delivery systems. The LR-056 allows a 4-20 mA sensor to digitally display its pressure and send to a final destination.

The sensor, such as the Brooks® SolidSense II® pressure transducer/transmitter, connects to the back of the LR-056 with a 4-pin Bendix™ connector. The LR-056 connects to the loop through a 2-wire pigtail cable and offers a real time reading for a single channel. The LR-056 has two user programmable setpoints which define a window - if the window is entered or left an output signal is generated.

This manual is organized into the following sections:

Section 1: Introduction

Section 2: Installation

Section 3: Operation.

Back Cover: Warranty and Sales/Service Contacts

It is recommended that this manual be read in its entirety before attempting to operate the Brooks LR-056 devices.



Figure 1-1 LR-056 Pressure Transducer Display

## 1-2 Intended Use

The LR-056 pressure transducer display is suitable for all transducers/transmitters with a Mil-/Bendix-plug and a signal of 4-20 mA analog output. The device can be freely programmed via two push-buttons located on the front of the device. The set parameters are being stored in an EEPROM and thus, are being kept also in the event of a power failure.

Limit exceeding in both directions can be displayed as a message. The integrated smart electronics permanently monitors all functions of the display. The device shall be used in accordance with the described intended use. No liability is assumed and warranty claims are excluded in case of improper application, modification or damage to the device.

## Brooks® LR-056

## 1-3 Specifications

**! WARNING**

**Do not operate this instrument in excess of the specifications listed in this manual. Failure to heed this warning can result in serious personal injury and/or damage to the equipment.**

**Performance**

Display Type:	4-digit, red LED with 7 segments
Range:	-1999 to +9999
Polarity:	Automatic (-) displayed in vacuum
Decimal Point:	Adjustable by customer
Accuracy:	$\pm 0.1\%$ full scale $\pm 1$ digit
Digital Damping:	0.3 to 30 seconds (programmable)
Value Update:	0.1 to 10 seconds (programmable)
Conversion Rate:	10 times / second
Temp. Coefficient:	$\pm 0.01\%$ F.S. /C°

**Mechanical**

Material:	Aluminum, black anodized
Digit Height/Width:	7mm / 4.85mm
Pigtail Length:	2m standard (optional length available on request)

**Stability**

Vibration:	10g RMS (20 to 2000 Hz)
Shock:	100g / 11 msec.
App. Shipping Weight:	200g

**Electrical**

Power requirements:	Current loop powered (transducer voltage +6 Vdc loop voltage drop)
Input:	4-20 mA (2-wire, loop powered)
Connections:	
Input:	Back mount; 4-pin female Bendix™ connector; factory wired for 4-20 mA transducer
Output:	Top mount; 6-wire cable
Pressure Warnings:	Optional 1 or 2 warnings, programmable in a window with 2 limits
Setpoint Contact	
Rating:	$I_{\max} = 50$ mA, $V_{\max} = 24$ Vdc electrically isolated
Resistive Load:	$R_{\min} = 450$ Ohm @ 24 Vdc
Power:	$P_{\max} = 200$ mW
Inductance:	4.7 mH
Switching Cycles:	>100M
Delay Time:	0 to 100 seconds
Protection:	
Short:	Permanent short-circuit protection
Reverse:	No damage at reverse polarity but, no function
Access:	Protection available
Data Storage:	Non-volatile EEPROM, min/max value memory



**Environmental**

Temp Range:  
Operating: -13 to 185°F (-25 to 85°C)  
Storage: -40 to 185°F (-40 to 85°C)

**Compliance**

CE: Compliant to EMC Directive EN61326  
RoHS: Compliant to RoHS Regulations

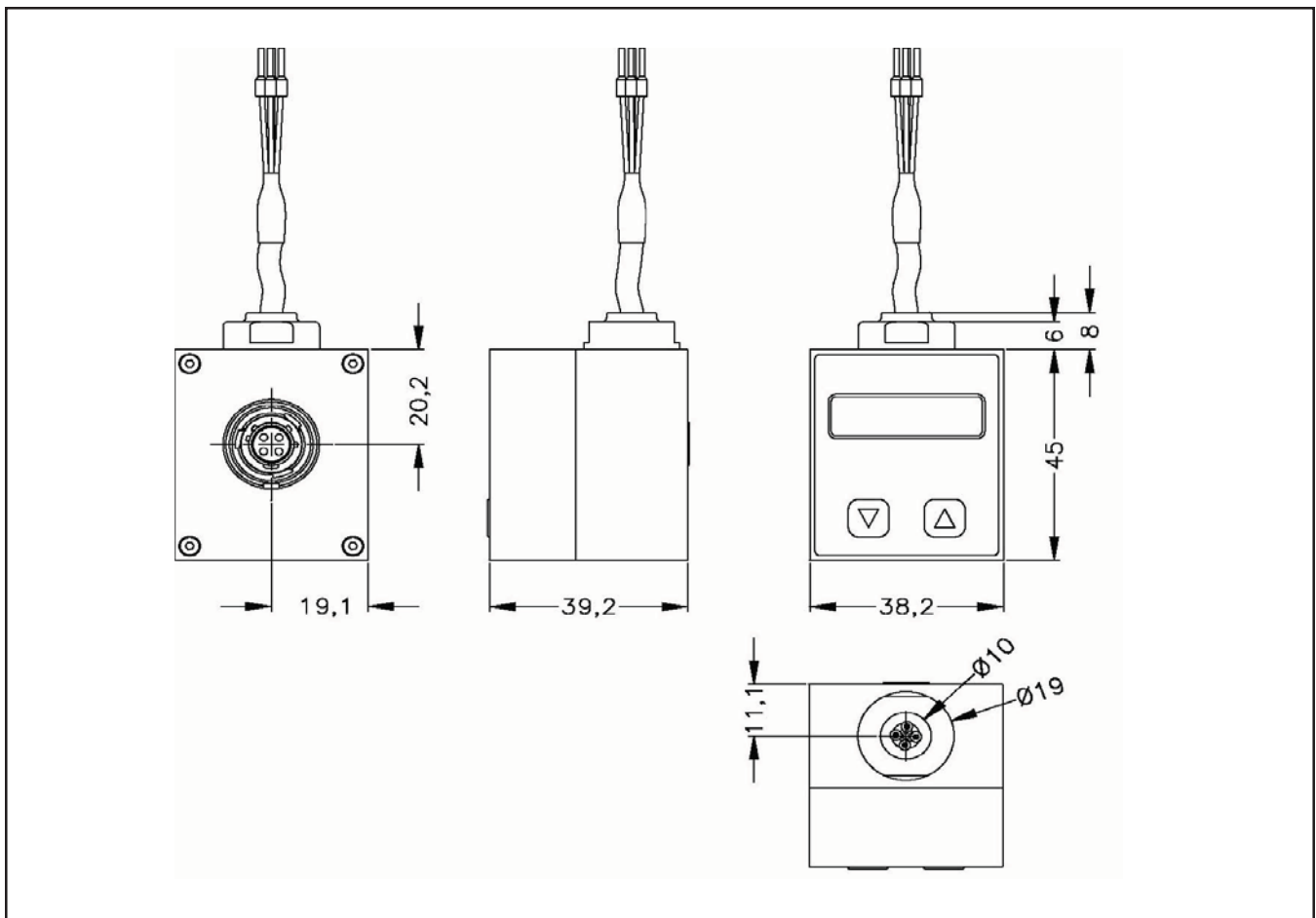
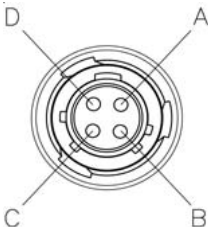


Figure 1-2 LR-056 Dimensions

Brooks® LR-056

Table 1-1 LR-056 Electrical Connections

### 4-pin Bendix™ Connector Layout

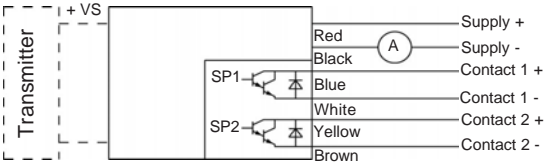


Mil- / Bendix™ Plug: PT 06A8-4S

#### Pin Configuration

Electrical connection		MIL- / Bendix-plug (4-pin)
2-wire system	Supply +	A
	Supply	D
	Contact 1 +	B
	Contact 2 +	-
	Contact 1	-
	Contact 2	-
	Ground	C

### Pigtail 6-Wire Cable



#### Pin Configuration

Electrical connection		cable colors (DIN 47100)
2-wire system	Supply +	red
	Supply	black
	Contact 1 +	blue
	Contact 2 +	yellow
	Contact 1	white
	Contact 2	brown
	Ground	yellow / green (shield)

Table 1-2 LR-056 Product Configuration

External Connector  
1 = 2m Pigtail  
2 = Custom

Connection: 1 = Black

Configuration: A = by Brooks; Z = by Customer\*

Setpoint Configuration: 0 = None; 1 = 1; 2 = 2

Model LR056

\*Pressure Range, Setpoints and Engineering Units to be specified at time of order

### 1-4 Product Identification

The device can be identified by its type plate. It provides the most important data. By the ordering code, the product can be clearly identified. For identification of the firmware, the program version (e.g. P07) will appear for about 1 second in the display after starting up the device. Please have this information on hand when calling for support and/or service.

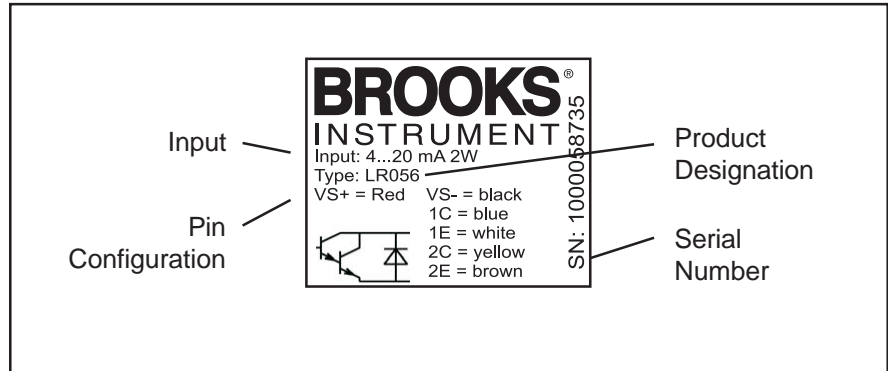


Figure 1-3 Example: LR-056 Type Plate

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## 2-1 General

This section provides installation instructions for the Brooks® LR-056 Pressure Transducer Displays. Refer to Section 1 of this manual for dimensions and connections.

## 2-2 Receipt of Equipment

When the instrument is received, the outside packing case should be checked for damage incurred during shipment. If the packing case is damaged, the local carrier should be notified at once regarding his liability. A report should be submitted to your nearest Product Service Department.

### Brooks Instrument

407 W. Vine Street  
P.O. Box 903  
Hatfield, PA 19440 USA  
Toll Free (888) 554 FLOW (3569)  
Tel (215) 362 3700  
Fax (215) 362 3745  
E-mail: BrooksAm@BrooksInstrument.com  
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### Brooks Instrument

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6718 WX Ede, Netherlands  
P.O. Box 428  
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Tel +31 (0) 318 549 300  
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E-mail: BrooksEu@BrooksInstrument.com

### Brooks Instrument

1-4-4 Kitasuna Koto-Ku  
Tokyo, 136-0073 Japan  
Tel +81 (0) 3 5633 7100  
Fax +81 (0) 3 5633 7101  
Email: BrooksAs@BrooksInstrument.com

Remove the envelope containing the packing list. Carefully remove the instrument from the packing case. Make sure spare parts are not discarded with the packing materials. Inspect for damaged or missing parts.

## 2-3 Recommended Storage Practice

If intermediate or long-term storage of equipment is required, it is recommended that the equipment be stored in accordance with the following:

- a. Within the original shipping container.
- b. Storage temperature 85°C (185°F) maximum, -40°C (-40°F) minimum.

Brooks® LR-056

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**2-4 Return Shipment**

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Prior to returning any device to the factory, visit the Brooks web site ([www.BrooksInstrument.com](http://www.BrooksInstrument.com)) for a Return Materials Authorization Number (RMA#), or contact one of the locations provided on p. 2-1.

All devices returned to Brooks require completion of Form RPR003-1, Brooks Instrument Decontamination Statement, along with a Material Safety Data Sheet (MSDS) for the fluid(s) used in the instrument. Failure to provide this information will delay processing by Brooks personnel. Copies of these forms can be downloaded from the Brooks website ([www.BrooksInstrument.com](http://www.BrooksInstrument.com)) or are available from any of the Brooks Instrument locations provided on p. 2-1.

**2-5 Transit Precautions**

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To safeguard against damage during transit, transport the device to the installation site in the same container used for transportation from the factory, if circumstances permit.

**2-6 Removal from Storage**

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Upon removal of the device from storage, a visual inspection should be conducted to verify its "as-received" condition. If the device has been subject to storage conditions in excess of those recommended (refer to "2-3 Recommended Storage Practice" on p. 2-1), if applicable, it should be subjected to a pneumatic pressure test in accordance with applicable vessel codes.

## 2-7 Mechanical Connections

Install the LR-056 Pressure Transducer Display as follows:

### **⚠ CAUTION**

**Failure to follow these procedures may adversely affect the product's performance and could void the product warranty. Inspect but DO NOT unwrap any parts until installation. Contact your Brooks representative with any problems.**

1. Remove the display from the box. Remove the outer protective bag and discard.
2. Do not use any force when installing the device.
3. Plug the display onto the transmitter.
4. Turn the MIL-/Bendix male and female plugs together till the internal part of the plug snaps in.
5. To turn the display in the required position, the adjusting screw must be loosened first by a 1/16" wrench. The adjusting screw is in the boring on the bottom side of the device, opposing to the cable. After loosening the screw, turn the display in the required position.  
**Do Not over-tighten the adjusting screw!**

## 2-8 Electrical Connections

### **⚠ CAUTION**

**The connection should be conducted with no power being present to the available connections.**

1. Establish the electrical connection of the device with the plug-on display using the pin configuration shown on the type plate of the device and Table 1-1, Section 1 of this manual.  
 Table 2-1 below, describes the output cable connections.

Table 2-1 LR-056 Output Cable Descriptions

Electrical Connection	Cable Color	Description
Supply +	red	This line must be connected with the positive power supply.
Supply -	black	This line must be connected with the negative power supply.
Contact 1 +	blue	This line gives the positive connection (collector), of the Darlington transistor of contact 1 or 2, out. The connection depends on application desired from the customer.
Contact 2 +	yellow	
Contact 1 -	white	This line gives the negative connection (emitter), of the Darlington transistor of contact 1 or 2, out. The connection depends on application desired from the customer.
Contact 2 -	brown	
Ground	yellow/green (shield)	This line must be grounded by the plug or the pressure port.

Note:

If an extension of the cable is necessary, a sheathed and twisted multicore cable is recommended.

## Brooks® LR-056

**2-9 Power Supply**

The supply created by the electronics of the plug-on display is approximately 6 Vdc. Please take this into consideration when planning your power supply. The limits for the power supply can be calculated as follows:

$$\text{minimum supply: } V_{S \min} = V_{MU \min} + 6\text{Vdc}$$

$$\text{maximum supply: } V_{S \max} = V_{MU \max} + 6\text{Vdc}$$

$V_{MU \min}$  = minimum supply of the used transmitter

$V_{MU \max}$  = maximum supply of the used transmitter

**2-10 Removal and Replacement****⚠ CAUTION**

**Dispose of used display units in compliance with local regulations.**

1. Remove power to the display.
2. Disconnect the Input/Output connection.
5. If replacing the display, follow Mechanical Installation steps in paragraph 2-7.



### 3-1 Operating and Display Elements

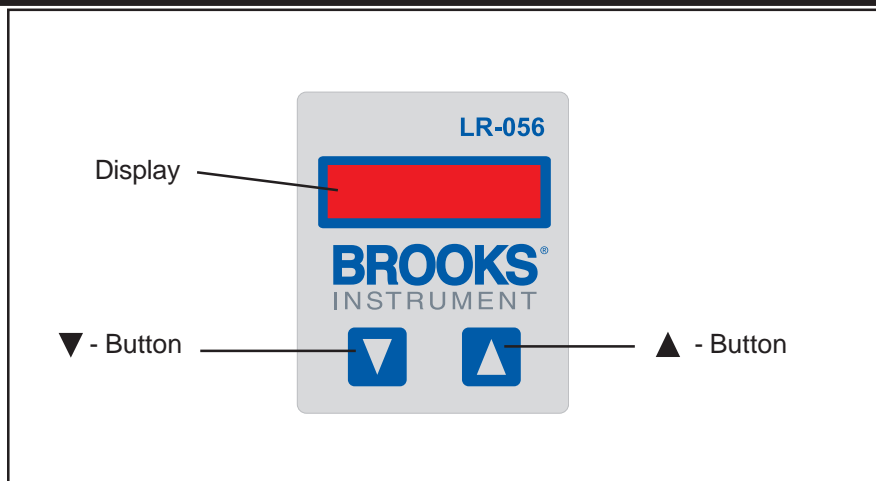


Figure 3-1 LR-056 Touch Pad

For indication of active contacts, the display is used. Depending on the active contact a message is given out, in change with the measured value. (For more information see Section 3-6 Special Menus, menu 5.)

The display of the measured value as well as the configuration of the individual parameters occurs through a menu via a 4-digit seven segment display. The individual functions can be set with the help of two miniature push buttons on the front of the device under the LED readout.

1. “▲” **button**: with this button you move forward in the menu system (ascending sequence of the menus) or increase the displayed value.
2. “▼” **button**: with this button you move backward in the menu system (descending sequence of the menus) or decrease the displayed value.
3. **both buttons simultaneously**: if both buttons are pushed simultaneously, the device changes between display and configuration mode; you also confirm the menu items and the set values for them.

**Note:**

When setting the values, you can increase the counting speed by keeping the respective button (“▲” or “▼”) pushed for more than 5 seconds.

**3-2 Menu Operation**

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The menu system is a closed system allowing you to scroll, both, forward and backward through the individual set-up menus to navigate to the desired setting item. All settings are permanently stored in an EEPROM and therefore available again even after disconnecting from the supply voltage.

The menu system and the menu items have been designed as simple as possible. Following, each individual item it is described allowing for a straightforward and quick configuration of your device. The structure of the menu system for devices with or without contacts is identical. The device with one contact deviates from the one without contacts by five additional menus. A device with two contacts has an additional 10 menus. These additional menus have a gray background for clear identification.

**Note:**

Please follow the manual meticulously and remember that changes of the adjustable parameters (switch-on point, switch-off point, etc.) only become effective after pushing both buttons simultaneously and after leaving the menu.

**3-3 Password System**

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The device is equipped with an access protection to permit operation of the complete menu system only by authorized personnel.

1. Activating the access protection will lock the complete menu.
2. The deactivation of the access protection by the password will unlock the complete menu.

**Note:**

The password can be activated and deactivated through menu "PAon" resp. "PAof".

It can be changed by special menu 4.

In case the password has been lost there is a possibility to reset the password. You can do this by loading the defaults via special menu 3.

3-4 Structure of the Menu System

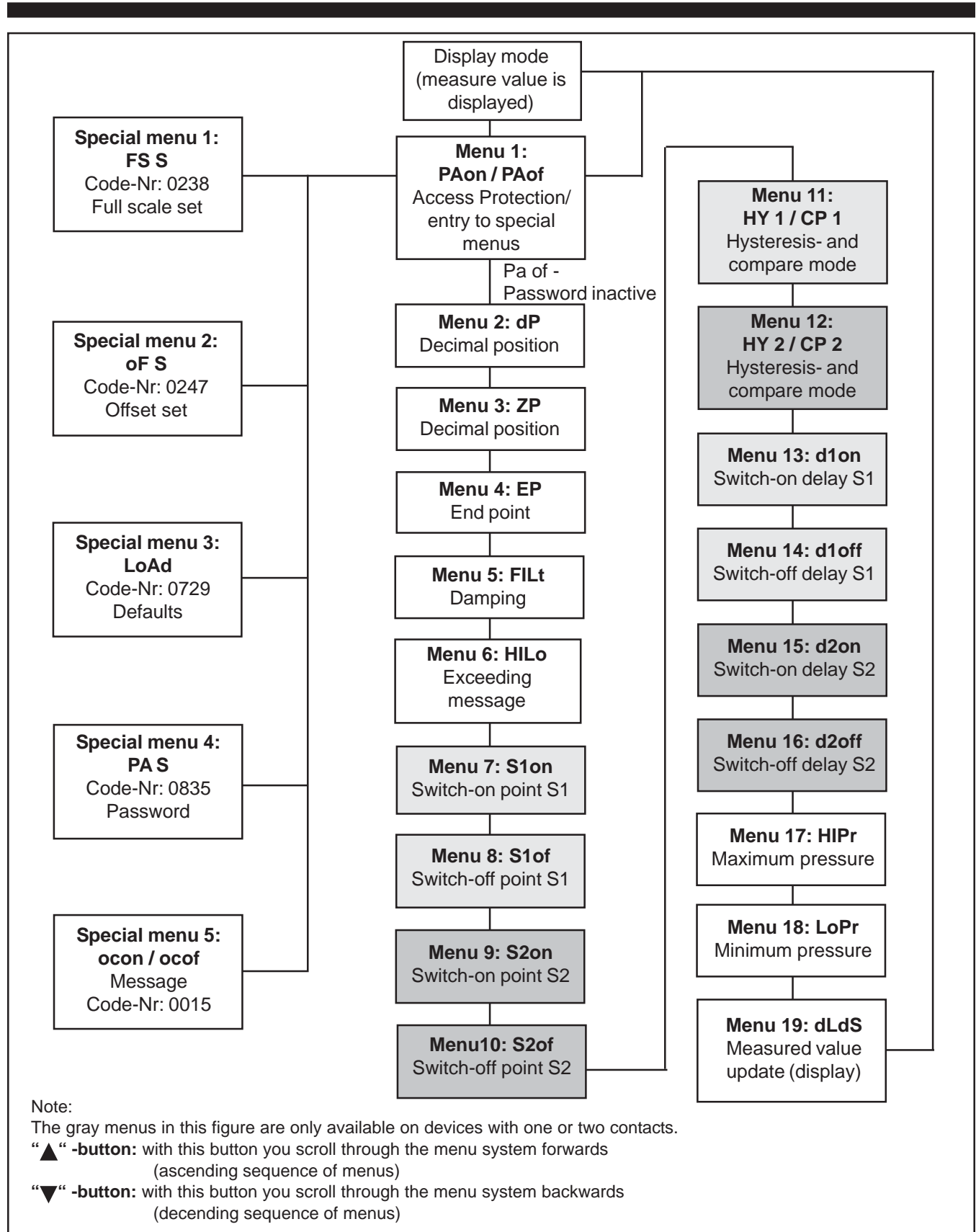


Figure 3-2 Menu System Rev. P08

## 3-5 Menu List

## Menu 1 - Access Protection

PAssword on

If the **password is active**, the menu “PAon” appears. Before being able to perform settings in the menu system, you must first enter the password. Proceed as follows for deactivation: push both buttons simultaneously to confirm the menu item “PAon”.

Next, set the password using the “▲” or “▼” buttons and confirm it by pushing both buttons simultaneously. The menu system is now unlocked and “PAof” appears on the display. You can now proceed as desired.

PAssword off

If the **password is inactive**, the menu “PAof” appears. To activate the access protection press both buttons simultaneously. Next, set your password by using the “▲” or “▼” buttons. confirm the password by pushing both buttons simultaneously. The menu system is now locked completely and “PAon” appears on the display.

**The default setting for the password is “5”**

Note: Modification of the password is described in the special menu “4”.

## Menu 2 - Setting the decimal point position

decimal Point

After confirming “dP” by pushing both buttons, the position of the decimal point can be selected. Set the desired position by using the “▲” or “▼” button. To complete the setting push both buttons simultaneously.

## Menu 3 - Setting the zero point

Zero Point

After confirming “ZP” by pushing both buttons, the zero point can be selected. The value set is shown when the output signal of the transmitter is 4 mA (zero point). To complete the setting push both buttons simultaneously.

## Menu 4 - Setting the end point

End Point

After confirming “EP” by pushing both buttons, the end point can be set. The value programmed will be shown when the electrical output signal of the transmitter is 20 mA (end point). To complete the setting push both buttons simultaneously.

## Menu 5 - Setting the damping

Filter

After confirming “FILt” by pushing both buttons, the time constant for a simulated low-pass filter can be set. This function allows getting constant display value although the measuring values changes very often. The permissible range reaches from 0.4 up to 30 seconds (in 0.2 second steps). To complete the setting push both buttons simultaneously.

### Menu 6 - Activation of the exceeding message



High / Low  
Pressure

After confirming "HI Lo" by pushing both buttons, the alarm for exceeding the range of the display can be activated. The status can be set on "on" or "off". To complete the setting push both buttons simultaneously.

Note: Please note that the exceeding message "HI" or "Lo", if turned on, appears in change with the contact message (special menu 5 ocon).

### Menu 7 - Setting the switch-on point for switch point 1



Set Point 1 on

After confirming "S1on" by pushing both buttons, the value can be set at which switching point 1 is activated. To complete the setting push both buttons simultaneously.

Note: For further information refer to the figures in menu "11".

### Menu 8 - Setting the switch-off point for switch point 1



Set Point 1 oF

After confirming "S1oF" by pushing both buttons, the value can be set at which switching point 1 is deactivated. To complete the setting push both buttons simultaneously.

Note: For further information refer to the figures in menu "11".

### Menu 9 - Setting the switch-on point for switch point 2



Set Point 2 on

After confirming "S2on" by pushing both buttons, the value can be set at which switching point 2 is activated. To complete the setting push both buttons simultaneously.

Note: For further information refer to the figures in menu "11".

### Menu 10 - Setting the switch-off point for switch point 2




Set Point 2 oF

After confirming "S2oF" by pushing both buttons, the value can be set at which switching point 2 is deactivated. To complete the setting push both buttons simultaneously.

Note: For further information refer to the figures in menu "11".

### Menu 11 - Hysteresis and compare mode of set point 1

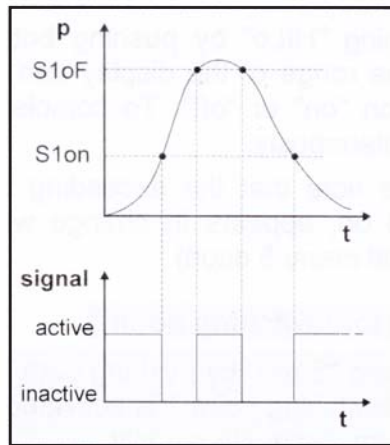


Hysteresis /  
Compare mode  
(Set Point 1)

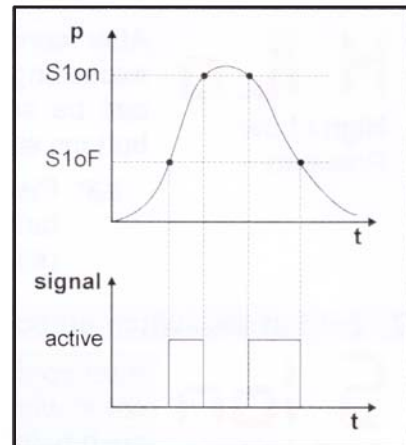
After confirming "HY1" resp. "CP 1" by pushing both buttons, the hysteresis or compare modes for switching point 1 can be switched over. To complete the setting push both buttons simultaneously.

Note: The following figures show the difference between hysteresis and compare mode as well as its inverting. To invert the respective modes, you must exchange the values for switch-on point and switch-off point.

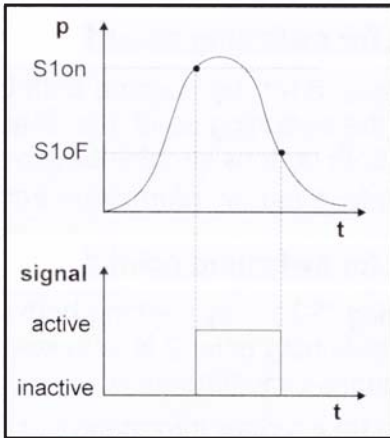
Menu 11 - Hysteresis and compare mode of set point 1 (Continued)



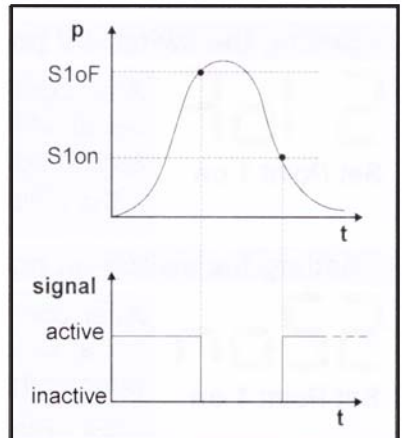
Compare Mode



Compare Mode Inverted



Hysteresis Mode



Hysteresis Mode Inverted

Menu 12 - Hysteresis and compare mode of set point 2



Hysteresis /  
Compare mode  
(Set Point 2)

After confirming "S2on" by pushing both buttons, the value can be set at which switching point 2 is activated. To complete the setting push both buttons simultaneously.

Note: For further information refer to the figures in menu "11".


Menu 13 - Setting the switch-on delay for set point 1



delay - Set  
Point 1 on

After confirming "d1on" by pushing both buttons, the switch-on delay after reaching switching point 1 can be set. The permissible range reaches from 0 to 100 seconds (in 0.2 second steps). To complete the setting push both buttons simultaneously.

#### Menu 14 - Setting the switch-off delay for set point 1

  
delay - Set  
Point 1 oFF

After confirming “d1oF” by pushing both buttons, the switch-off delay after reaching switching point 1 can be set. The permissible range reaches from 0 to 100 seconds (in 0.2 second steps). To complete the setting push both buttons simultaneously.

#### Menu 15 - Setting the switch-on delay for set point 2

  
delay - Set  
Point 2 on

After confirming “d2on” by pushing both buttons, the switch-off delay after reaching switching point 2 can be set. The permissible range reaches from 0 to 100 seconds (in 0.2 second steps). To complete the setting push both buttons simultaneously.

#### Menu 16 - Setting the switch-off delay for set point 2

  
delay - Set  
Point 2 oFF

After confirming “d2oF” by pushing both buttons, the switch-off delay after reaching switching point 2 can be set. The permissible range reaches from 0 to 100 seconds (in 0.2 second steps). To complete the setting push both buttons simultaneously.

#### Menu 17 - High-Pressure

  
High Pressure

After confirming “HiPr” by pushing both buttons, the maximum pressure during the measurement process will be shown on the display. If both buttons are activated with one second, the stored value will be erased. Please note that the value will not remain stored if the power supply is interrupted (current loop).

#### Menu 18 - Low-Pressure

  
Low Pressure

After confirming “LoPr” by pushing both buttons, the minimum pressure during the measurement process will be shown on the display. If both buttons are activated with one second, the stored value will be erased. Please note that the value will not remain stored if the power supply is interrupted (current loop).

#### Menu 19 - Measured value update (Display)

  
delay display

After confirming “dLdS” by pushing both buttons, the measured value update in the display can be set. The time can be set in which cycles the update in the display should occur. The permissible range reaches from 0.2 up to 10 seconds (in 0.2 second steps). To complete the setting push both buttons simultaneously.

### 3-6 Special Menus

To access the special menus, you must be in menu 1 "PAon". Select the menu item "PAon" with the "▲" or "▼" buttons and confirm it by pushing both buttons simultaneously. "1" appears in the display. To navigate to the special menus, proceed as described below.

#### Special menu 1 - Correction of the display on deviation of full scale

The image shows a red LED display with the characters 'FS S' in a seven-segment font. The 'F' and 'S' are on the left, and a single 'S' is on the right.

Full Scale Set

During the life of the device, full scale - which is nominally set e.g. at 20,000 mA - may shift. As a consequence, a deviating signal value, in reference to the end point of nominal pressure range, may be transmitted. The software of the device has a function to remove this phenomenon:

For correction of the display on deviation of the full scale of the transmitter select "0238" by using "▲" or "▼" buttons. Confirm it by pushing both buttons simultaneously. "FS S" appears in the display. Now it is necessary to place the device under pressure using a known pressure reference. This pressure must correspond to the end point of the pressure measuring range. If you then push both buttons the signal being emitted from the transmitter will be stored as the full scale. The display will then show the end point although the full scale sensor signal is displaced. Please note that the output signal is not effected by this change. Besides, a later resetting of the display on deviation of offset causes a deviation of the full scale too.

#### Special menu 2 - Resetting the display on deviation of offset

The image shows a red LED display with the characters 'of S' in a seven-segment font. The 'of' is on the left, and a single 'S' is on the right.

Offset Set

During the life of the device, the offset - which is nominally set at 4,000 mA - may shift. This would result in the plug-in display showing a signal value deviating from the measuring range zero point originally set. The software of the device has a function to remove this phenomenon:

For resetting the display on deviation of the offset set the number "0247" using the "▲" or "▼" buttons. Confirm by pushing both buttons simultaneously. "of S" appears in the display. If the offset differs from the ambient pressure, it is necessary to place the device under pressure. This pressure must correspond to the zero point of the pressure measuring range. If you then confirm with both buttons, the signal being emitted in the display will be stored as offset. The display will then show the zero point although the sensor signal in the offset is displaced. Please note that the output signal is not effected by this change. Simultaneously with the displacement of the offset the full scale will be equally displaced.



### Special menu 3 - Load defaults



Load defaults

The plug-on display software can switch the device back to the defaults. This can be used to cancel any changes to the offset and range that had been carried out.

To load the defaults set the number "0729". Confirm by pushing both buttons simultaneously. "LoAD" appears in the display.

Pressing the two buttons again loads the defaults.

Please note that the password will also be set on its default.

### Special menu 4 - Set new password



Set Password

To change the password, set the number "0835" using the "▲" or "▼" buttons. Confirm by pushing both buttons. When confirmed with both buttons "SEtP" appears in the display. Next, set a password using the "▲" or "▼" buttons. It can freely chosen (0 to 9999). However, it must not be identical with the code numbers of the special functions. (This means the numbers 0238, 0247, 0729 and 0835 are exempt.) Finally, confirm the password by pressing both buttons. To activate the password, follow the steps in the "PAon" menu 1, pg 3-4.

### Special menu 5 - Active contact message



Open collector on

For identification of active contacts, the display is used. Depending on the active contact messages "on1" or "on2" will be given out, in change with the measured value. If both contacts are active, the message "on12" will be indicated in the display. (If no contact is active, no message will given out.) If an indication of this message is not desired it can be turned off by this special menu.



Open collector off

To turn the function on or off, which gives the message out, set the number "0015" using the "▲" or "▼" buttons. When confirming it with both buttons, this function will be automatically be turned on or off. If "ocon" is indicated in the display, messages will be given out. If "ocof" is indicated in the display, no messages will be given out when the contacts are active. Please note the the exceeding message "HI" or "Lo", if turned on by menu 6 (HILo), appears in change with the contact message.

### 3-7 Maintenance and Removal

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#### **WARNING**

**If it becomes necessary to remove the instrument from the system, power to the device must be disconnected.**

This device is maintenance-free. If desired, the device may be cleaned using a non-aggressive cleaning solution.

To return the device for repair refer to Section 2-4 Return Shipment for instructions.

Disposal of the device must comply with RoHS regulations, European Directives 2002/96/EC and 2003/108/EC and your local ordinances.

Refer to the back cover of this manual for warranty information.

**Installation and Operation Manual**

X-PR-LR-056-PD-eng

Part Number: 541B171AAG

February, 2012

Brooks® LR-056

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Brooks® LR-056

LIMITED WARRANTY

Seller warrants that the Goods manufactured by Seller will be free from defects in materials or workmanship under normal use and service and that the Software will execute the programming instructions provided by Seller until the expiration of the earlier of twelve (12) months from the date of initial installation or eighteen (18) months from the date of shipment by Seller. Products purchased by Seller from a third party for resale to Buyer ("Resale Products") shall carry only the warranty extended by the original manufacturer.

All replacements or repairs necessitated by inadequate preventive maintenance, or by normal wear and usage, or by fault of Buyer, or by unsuitable power sources or by attack or deterioration under unsuitable environmental conditions, or by abuse, accident, alteration, misuse, improper installation, modification, repair, storage or handling, or any other cause not the fault of Seller are not covered by this limited warranty, and shall be at Buyer's expense.

Goods repaired and parts replaced during the warranty period shall be in warranty for the remainder of the original warranty period or ninety (90) days, whichever is longer. This limited warranty is the only warranty made by Seller and can be amended only in a writing signed by an authorized representative of Seller.

BROOKS SERVICE AND SUPPORT

Brooks is committed to assuring all of our customers receive the ideal flow solution for their application, along with outstanding service and support to back it up. We operate first class repair facilities located around the world to provide rapid response and support. Each location utilizes primary standard calibration equipment to ensure accuracy and reliability for repairs and recalibration and is certified by our local Weights and Measures Authorities and traceable to the relevant International Standards.

Visit www.BrooksInstrument.com to locate the service location nearest to you.

START-UP SERVICE AND IN-SITU CALIBRATION

Brooks Instrument can provide start-up service prior to operation when required.

For some process applications, where ISO-9001 Quality Certification is important, it is mandatory to verify and/or (re)calibrate the products periodically. In many cases this service can be provided under in-situ conditions, and the results will be traceable to the relevant international quality standards.

CUSTOMER SEMINARS AND TRAINING

Brooks Instrument can provide customer seminars and dedicated training to engineers, end users and maintenance persons.

Please contact your nearest sales representative for more details.

HELP DESK

In case you need technical assistance:

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Due to Brooks Instrument's commitment to continuous improvement of our products, all specifications are subject to change without notice.

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