instruction manual

BRIGHT

Local colour TFT readout and control module

Doc nr.: 9.17.048L Date: 25-07-2022

ATTENTION:
Before installing and operating the instrument it is recommended to read the Short-form user manual or this instruction manual. Not following the guidelines could result in personal injury and/or damage to the equipment.

Bronkhorst®

Disclaimer

Even though care has been taken in the preparation and publication of the contents of this manual, we do not assume legal or other liability for any inaccuracy, mistake, misstatement or any other error of whatsoever nature contained herein. The material in this manual is for information purposes only, and is subject to change without notice.

Symbols

Important information. Discarding this information could cause injuries to people or damage to the Instrument or installation.

Helpful information. This information will facilitate the use of this instrument.

Additional info available on the internet or from your local sales representative.

Receipt of equipment

Check the outside packing box for damage incurred during shipment. Should the packing box be damaged, then the local carrier must be notified at once regarding his liability, if so required. At the same time a report should be submitted to your distributor.

Carefully remove the equipment from the packing box. Verify that the equipment was not damaged during shipment. Should the equipment be damaged, then the local carrier must be notified at once regarding his liability, if so required. At the same time a report should be submitted to your distributor.

Equipment storage

The equipment should be stored in its original packing in a cupboard warehouse or similar. Care should be taken not to subject the equipment to excessive temperatures or humidity.

Warranty

The products of Bronkhorst® are warranted against defects in material and workmanship for a period of three years from the date of shipment, provided they are used in accordance with the ordering specifications and the instructions in this manual and that they are not subjected to abuse, physical damage or contamination. Products that do not operate properly during this period may be repaired or replaced at no charge. Repairs are normally warranted for one year or the balance of the original warranty, whichever is longer.

See also paragraph 9 of the Conditions of sales:
http://www.bronkhorst.com/files/corporate_headquarters/sales_conditions/en_general_terms_of_sales.pdf

- The warranty includes all initial and latent defects, random failures, and indeterminable internal causes.
- It excludes failures and damage caused by the customer, such as contamination, improper electrical hook-up, dropping etc.
- Re-conditioning of products primarily returned for warranty service that is partly or wholly judged non-warranty may be charged for.
- Bronkhorst High-Tech B.V. prepays outgoing freight charges when any part of the service is performed under warranty, unless otherwise agreed upon beforehand. However, if the product has been returned collect to Bronkhorst High-Tech B.V., these costs are added to the repair invoice. Import and/or export charges, foreign shipping methods/carriers are paid for by the customer.

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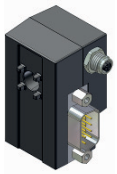
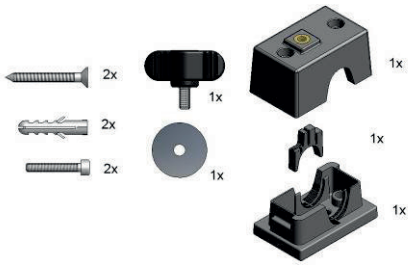
1 Scope of this manual

1.1 Introduction

The BRIGHT is a readout and operator module for Bronkhorst® digital Mass Flow and Pressure Meters/Controllers. The module not only allows reading of actual and total flow, simultaneously, but also features local operation, i.e. change of setpoint, counter reset, setting of engineering units, fluid name and tag number, etc. Four push-buttons at the right side of the device give access to a user-friendly menu. The bright 1.8” color display is clearly visible over a wide angle, due to state-of-the-art TFT-technology. The weatherproof (IP65) housing makes the module suitable for use in industrial areas and the module can be mounted on the instrument or, using the mounting kit, on an adjacent wall or panel and on the pipework.

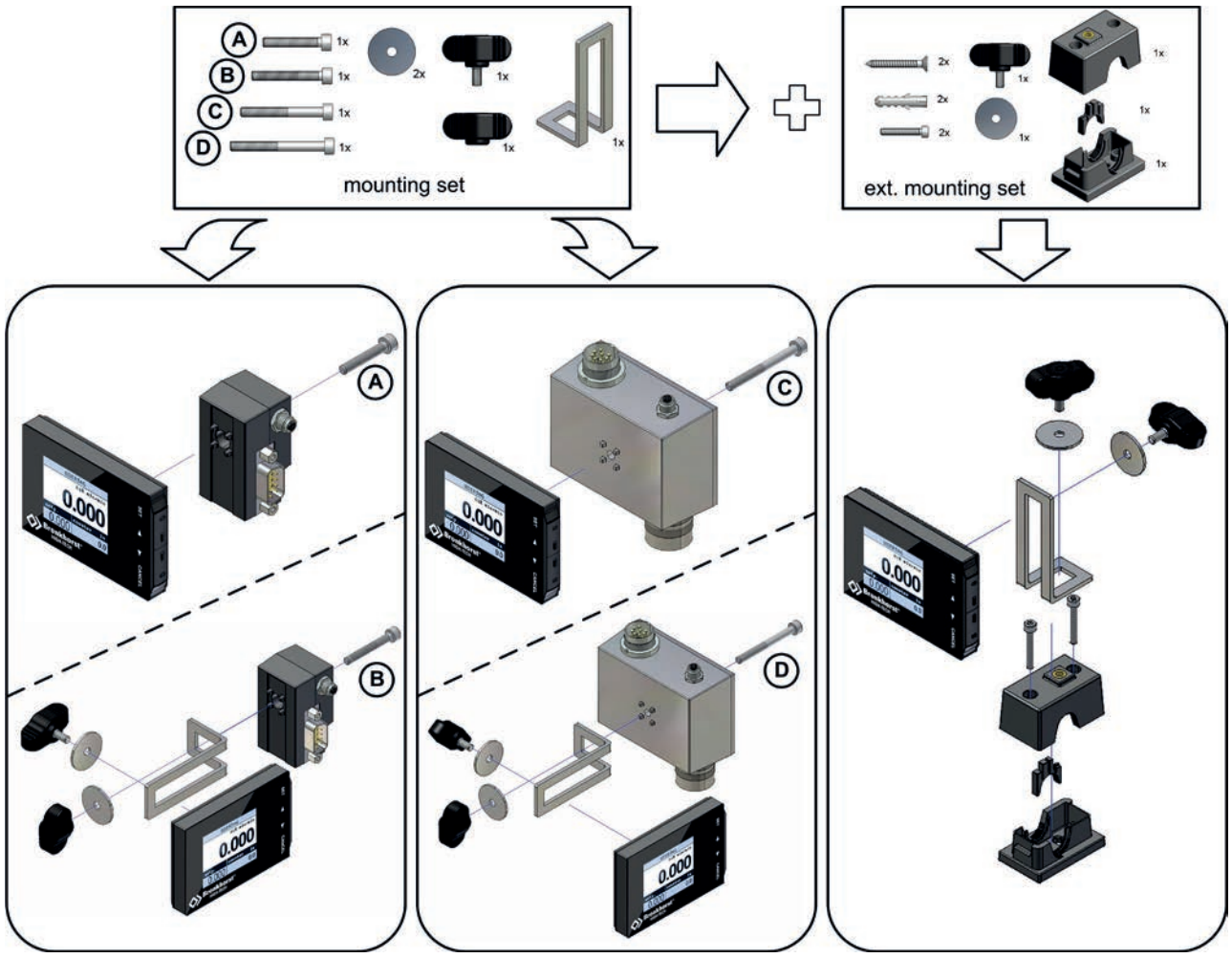
Note
Because the BRIGHT uses the RS232 port of these instruments for communication, other RS232 communication is not possible. When the instrument is connected with a bus-system like PROFIBUS DP or DeviceNet, communication with this bus-system will not be effected. Measure, setpoints and other parameters can be “read-and-write” by the BRIGHT or via the bus-system.

2 Unpacking

B1	B2	B3	B4		
✓	✓	✓	✓		**BRIGHT module**
✓	✓	✓	✓		**Mounting set**
✓	✓	-	-		**IP40 T-part**
-	-	✓	✓		**IP65 T-part**
✓	✓	✓	✓		**Short 0.3m cable**
-	✓	-	✓		**Extended mounting set**
-	✓	-	✓		**Long cable for distance mounting up to 1.0m**
✓	✓	✓	✓		**Short-form manual**

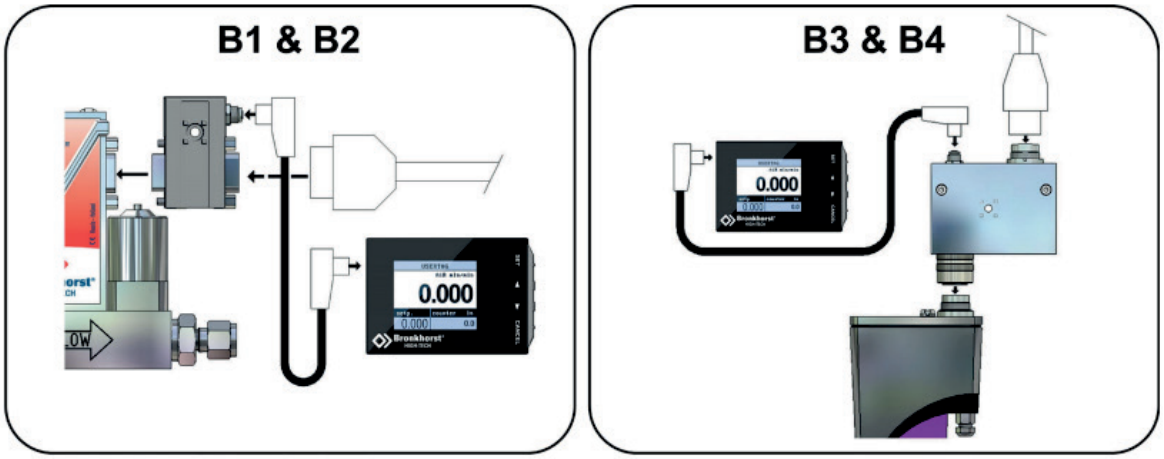
	Check the outside packing box for damage incurred during shipment. Should the packing box be damaged, then the local carrier must be notified at once regarding his liability, if so required. At the same time a report should be submitted to: **BRONKHORST HIGH-TECH B.V.** **RUURLO HOLLAND**
	Do not discard spare or replacement parts with the packing material and inspect the contents for damaged or missing parts.
	When returning material, always describe the problem and if possible the work to be done, in a covering letter. Take proper care of packing, if possible use the original packing box **Important:** Clearly note, on top of the package, the customer clearance number of Bronkhorst High-Tech B.V., namely: **NL801989978B01**

3 Mounting

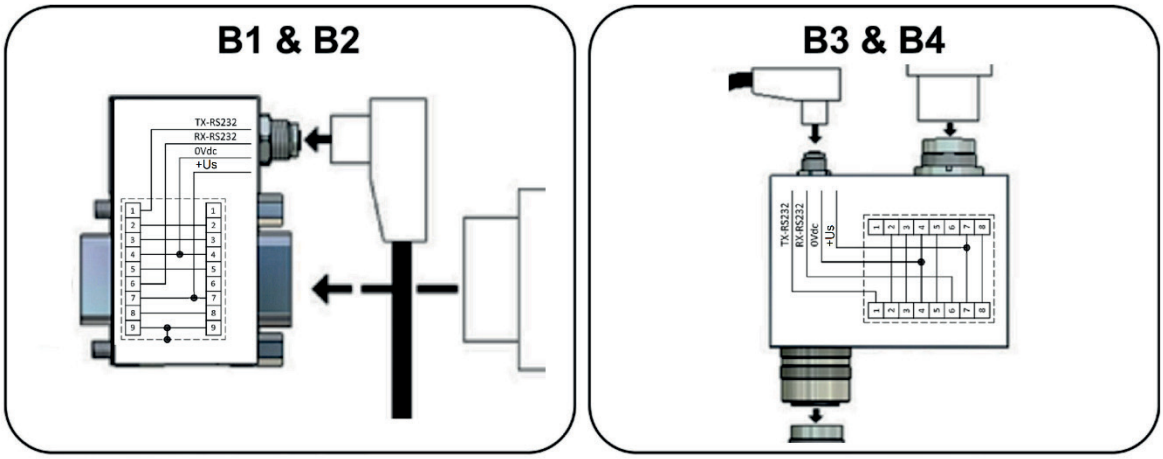


⚠	Take attention to tighten, don't over tight.
⚠	The BRIGHT comes with 4 different bolts. Please check the instruction above which bolt should be used.
💡	The design makes it possible to place the BRIGHT in other positions as shown above. The clip and the BRIGHT can be turned in angles of 90°. The BRIGHT can also be placed on the backside of the T-part.
💡	The external mounting-part can also be used for mounting the BRIGHT on a wall.
ⓘ www	Dimensional drawings are available at the download section of our website: http://www.bronkhorst.com

4 Connecting

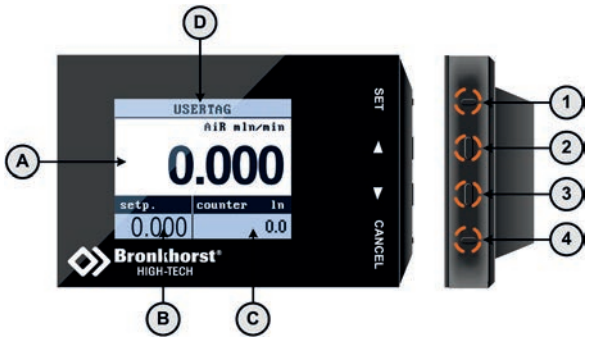


T-part internal routing of leads



⚠	Do not apply pressure until electrical connections are made.
⚠	When providing your own power supply, be sure that voltage and current rating are according to the specifications of the instrument(s). Cable wire diameters should be sufficient to carry the supply current and voltage losses must be kept as low as possible.
⚠	Bronkhorst® recommends using their standard cables. These cables have the right connectors and if loose ends are used, these will be marked to prevent wrong connection. The hook-up diagrams are available at the download section of our website: http://www.bronkhorst.com
⚠	Before switching on power check if all connections have been made according to the hook-up diagram which belongs to the instrument.
⚠	Turn on power and allow at least 30 minutes to warm up and stabilize the connected instrument.
⚠	When the T-part is connected, other RS232 communication is disabled.

5 User Interface



Display

- (A) Measure readout
- (B) Custom readout 1
- (C) Custom readout 2
- (D) Top line

Buttons

- (1) SET Button
- (2) ▲ Button
- (3) ▼ Button
- (4) CANCEL Button

5.1 Buttons

The buttons have the following functions:

SET
- Enter selected menu
- Enter edit mode
- Confirm selection/changes

▲
- Menu selection up
- Select information field
- Next character in edit mode
- Up in table

▼
- Menu selection down
- Select information field
- Previous character in edit mode
- Down in table

CANCEL
- Return to previous screen
- Undo and Exit edit mode
- Change information in right user-field

5.2 Power-up

When power-up, the BRIGHT shows consecutive:

(1) Firmware version

(2) Bronkhorst logo

(3) Readout screen.

5.3 Display

The display is divided into 4 areas, 'measure readout', 'custom readout 1', 'custom readout2' and the top line. The information in these areas can be configured by the user.

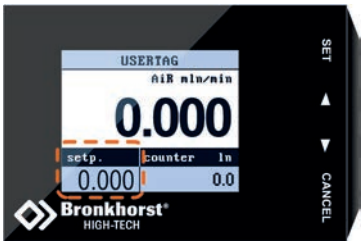
If an area contains a parameter which can be set or reset by the operator, you can press ▲ or ▼ to select this parameter. Press SET to enter the edit mode or press CANCEL to return to 'measure readout'.

> ⚠ If 'custom readout1' is disabled. You can only switch between 'measure' and 'custom readout 2'

5.4 Measure readout

This area shows the actual flow. The following parameters will affect the format of this readout:

- actual or percentage readout
- number of digits



5.5 Custom readout 1

This area can be enabled or disabled by the operator. When enabled, the operator can choose one of the following parameters to be shown:

parameter	editable
setpoint	yes
actuator	no
temperature	no
density	no

The available parameters of this area are determined by the connected instrument.

*See chapter Customize display info on page **30** to select one of the above parameters.*

5.6 Custom readout 2

The 'Custom readout 2' area is always visible. The user can choose one of following parameters to be shown:

parameter	editable
counter	yes
setpoint	yes
actual or percentage reading	no
actuator	no
alarm	yes
capacity	no
temperature	no
density	no
select instr.	yes

The available parameters of this area are determined by the connected instrument.

From the 'measure readout' press CANCEL to change the readout parameter of 'custom readout 2'.Press CANCEL again te select the next available parameter.

5.7 Top line

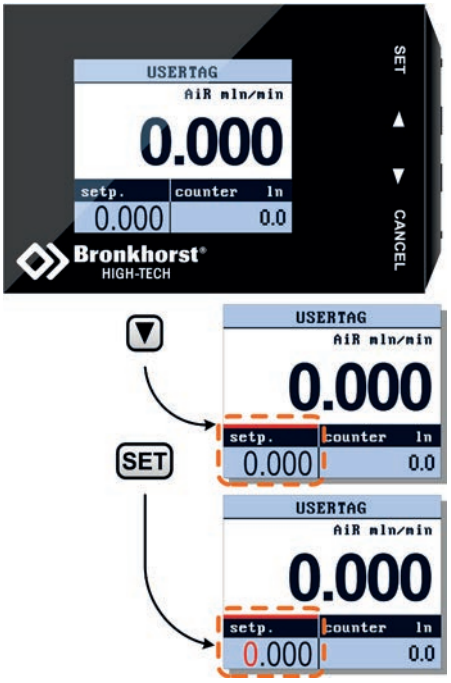
The top line will show the USERTAG or the serial number of the connected instrument.

5.8 Edit Setpoint

Setpoint can only be edited when the setpoint parameter is displayed in custom readout 1 or 2.

Security settings can be set to avoid unauthorised access to the setpoint parameter.

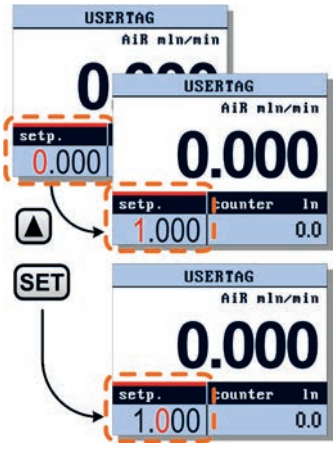
To edit the setpoint press ▼ to select the readout area in which this parameter is displayed. Press SET to enter the edit mode, the first digit will lighten.



⚠ Security settings can be set to avoid unauthorised access to the setpoint.

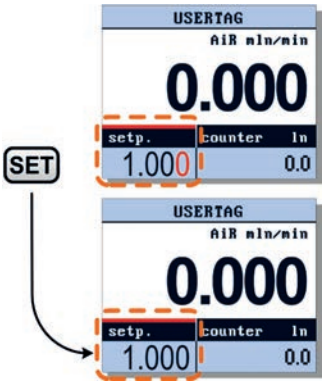
For changing security settings see chapter “Security Settings” on page **33**.

Use ▲ or ▼ to change the digits, press SET to confirm and select the next digit.

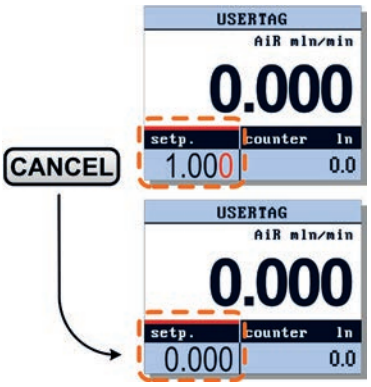


You can change the setpoint edit mode into ‘step’. This enables you to change the setpoint using fixed steps. See chapter Customize display info page **30**.

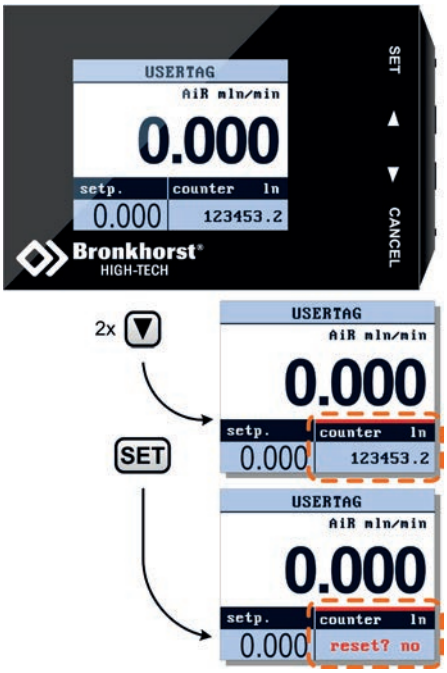
After the last digit is confirmed, the setpoint will be sent to the instrument.



⚠ If the entered setpoint is ignored, check controller mode. See chapter Controller mode on page **19**.



The CANCEL button can be used to exit the edit mode and cancel the changes.

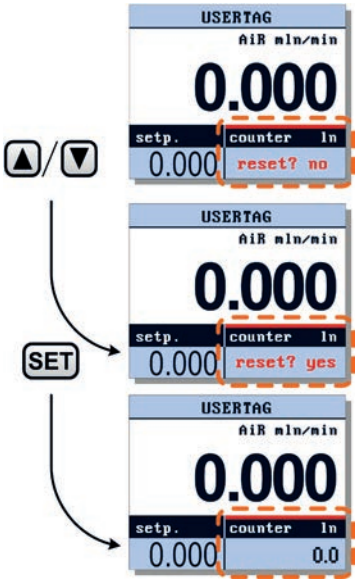


5.9 Reset Counter

The Counter can only be reset when the counter parameter is displayed in custom readout 2. Security settings can be set to avoid unauthorised access to the counter parameter.

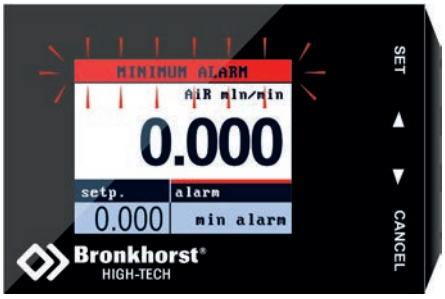
Check chapter “Custom readout 2” on page **10** how to change the shown parameter.

To reset the counter press 2x ▼ to select the readout area in which this parameter is displayed. Press SET to enter the edit mode.



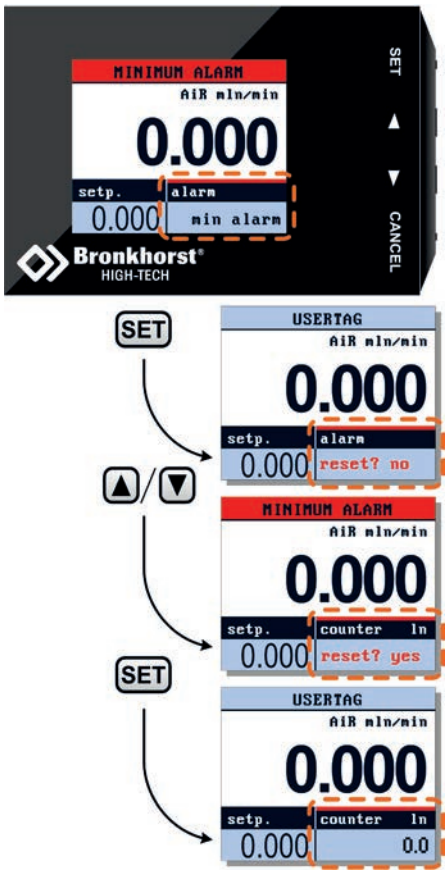
Press ▼ or ▲ to select ‘yes’ and press SET to confirm. The counter will be reset to 0.

The CANCEL button can be used to exit the edit mode and cancel the changes.



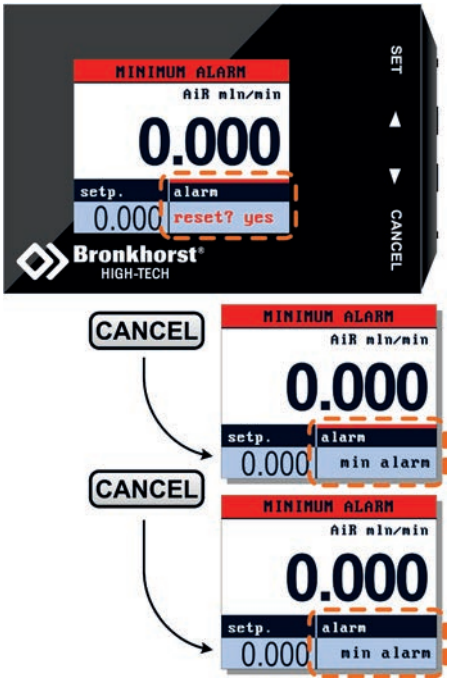
5.10 Reset Alarm

Alarm messages will be shown in the topline of the display and custom readout 2 will be selected automatically.



Enter the edit mode by pressing SET. Use ▲ or ▼ to select 'yes' and press SET again to confirm.

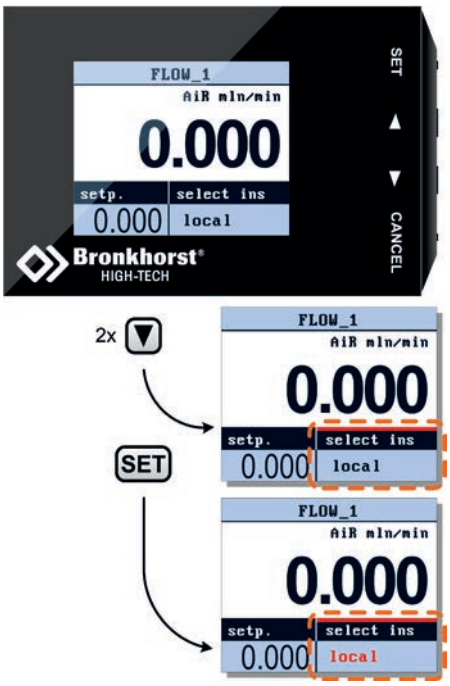
⚠	An alarm message will be occurring as long as the cause has not been removed/repaired.
⚠	Security settings can be set to avoid unauthorised access to this option.
💡	For changing security settings see chapter "Security Settings" on page **33**.



The CANCEL button can be used to exit the edit mode and cancel the changes.

If you are not intending to reset the alarm, you can press CANCEL to deactivate 'Custom readout 2'. Check chapter "Custom readout 2" on page **10** how to select another parameter in this readout.

Actual alarm messages will always been shown in the topline.

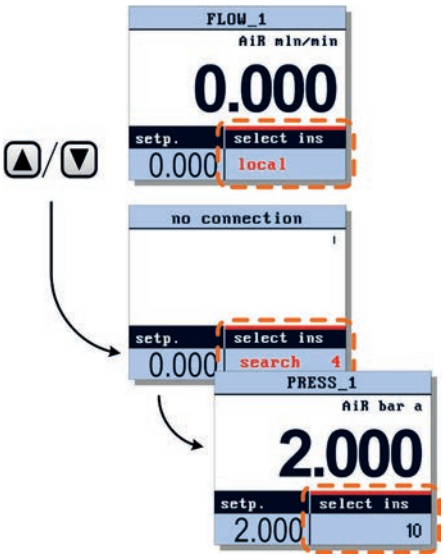


5.11 Select Instrument

When the instrument is connected to a FLOWBUS system, it is possible to select another instrument on this bus to operate. Check chapter "Custom readout 2" on page **10** how to select the option "select instr." in "Custom readout 2".

To enter the "select instrument" mode, press 2x ▼. Press SET to enter.

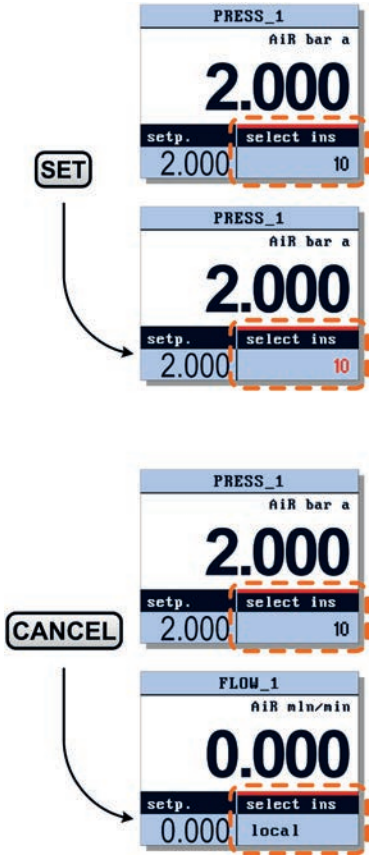
⚠	Security settings can be set to avoid unauthorized access to this option.
💡	For changing security settings see chapter "Security Settings" on page **33**.



The instrument directly connected with the BRIGHT will be indicated as 'local'. Other instruments will be indicated with their node address.

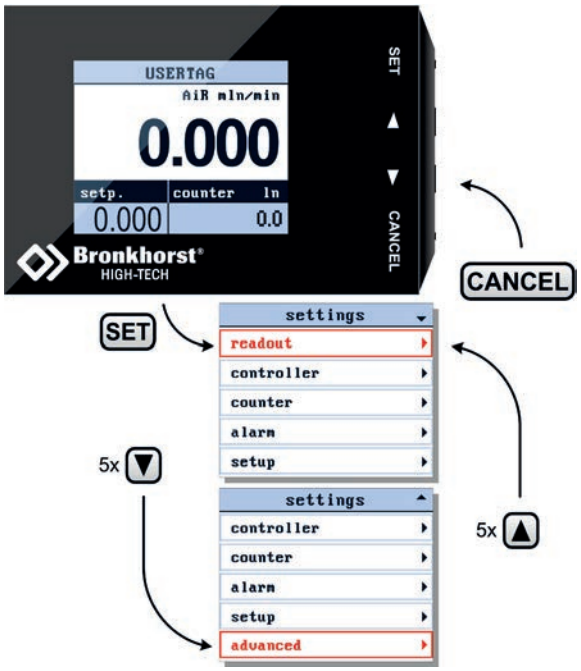
Press ▲ or ▼ to search another instrument on the bus. While the message "search" is displayed, the BRIGHT is searching for a valid node address and it will not show any specific instrument info till an active node is found.

When an active node address is found, the BRIGHT will show the corresponding USERTAG or Serial Number in the topline. It will also show the actual measure and, if applied, the actual set point.



Press SET to select this instrument to be operated by the BRIGHT or press CANCEL to return to the previous selected instrument.

6 Settings menu

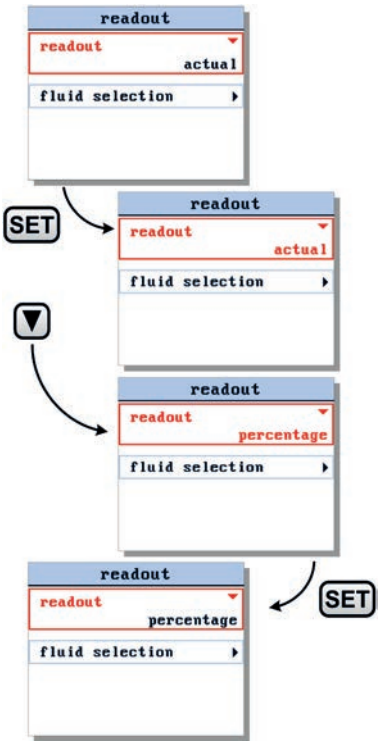


From the readout screen press SET to enter the settings menu. Press CANCEL to return to the readout screen.

⚠	Security settings can be set to avoid unauthorised access to this menu.
💡	For changing security settings see chapter “Security Settings” on page **33**.
⚠	The available menu options are determined by the instrument you are operating.

In the following explanation, all possible options are shown.

The ▼ or ▲ signs in the upper right corner indicates that you can scroll this menu using the ▲ and ▼ buttons to select more items. Press SET to enter the selected menu item.



6.1 Readout screen

From the readout screen you can edit the following settings:

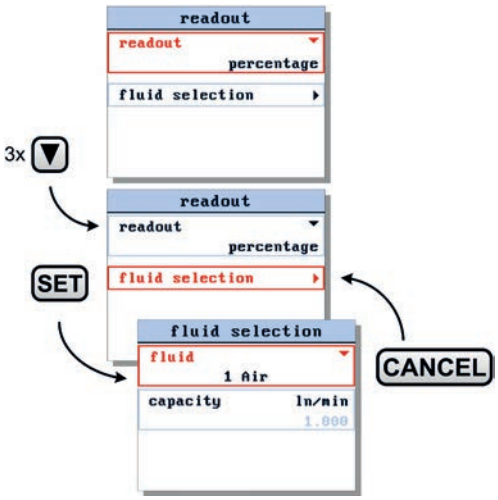
- o readout format, actual or percentage
- o fluidset selection
- o capacity

6.2 readout format

Enter the readout settings screen and press SET to enter the edit mode of the readout option. Use ▲ or ▼ to select either 'actual' or 'percentage'.

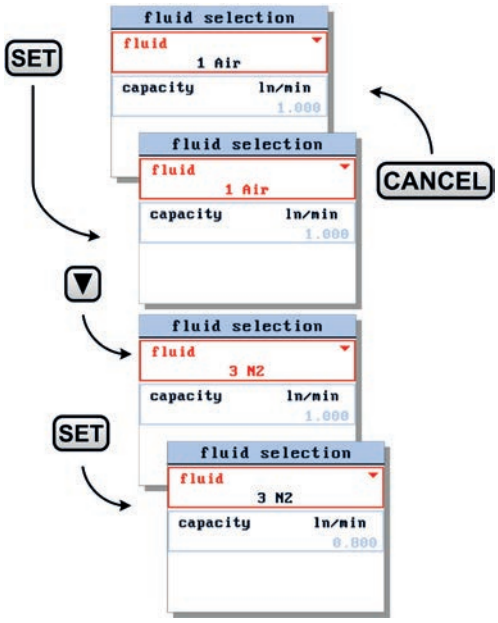
Press CANCEL to exit the edit mode without changing or press SET to confirm your selection.

Press CANCEL to return to the settings menu. Press CANCEL again to return from the settings menu to the readout screen.



6.3 fluidset selection

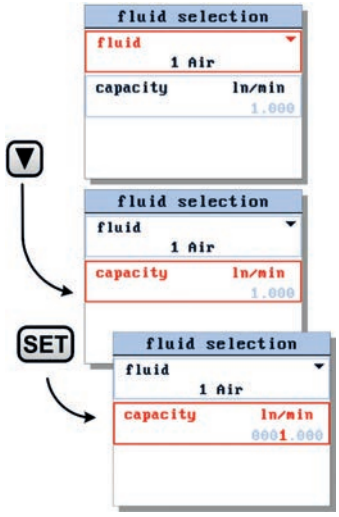
From the readout screen press ▼ to select 'fluid selection' and press SET to enter the fluid selection.



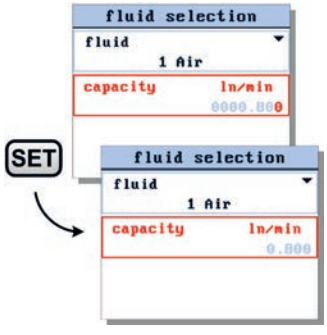
Press SET again to enter the edit mode of the fluid field. Use ▲ or ▼ to select one of the available fluidsets. Press SET to confirm.

Press 3x CANCEL to return to the readout screen.

6.4 fluid capacity



From the readout screen, press ▼ to select 'fluid selection' and press SET to enter. In the fluid selection screen press ▼ to select capacity and press SET to enter the edit mode.



Now the fluid capacity can be changed between the minimal and maximal capacity of the selected fluid of the operating instrument.

When the last character is confirmed, the value will be activated. Pressing CANCEL before confirming the final character will undo changes.

Use the CANCEL button to return to the measure screen.

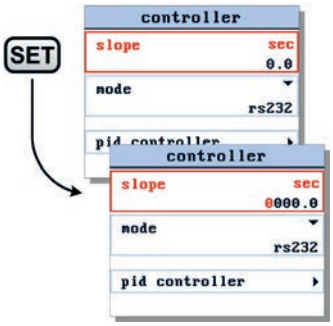
6.5 Controller settings screen

From the controller settings screen you can edit the following settings:

- setpoint slope time
- controller mode
- master address.
- PID settings
- response settings

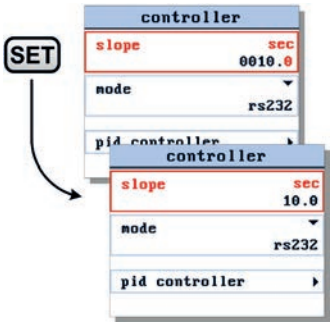
To enter the controller settings screen, select the controller option from the settings menu and press SET.

Take care when changing the controller settings. Wrong controller settings can cause unpredictable instrument behavior.



6.6 Setpoint slope

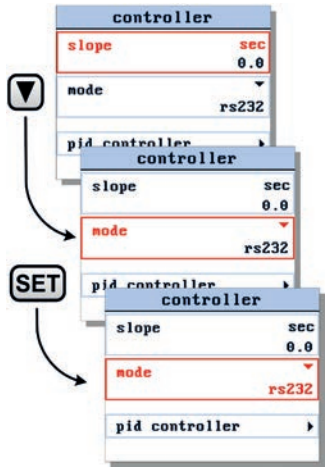
When entering the controller settings screen, the setpoint slope parameter is already selected. Press SET to enter the edit mode.



Now you can change the slope time. Use ▲ and ▼ to select a character and press SET to select the next character. Press CANCEL to exit the edit mode without changes.

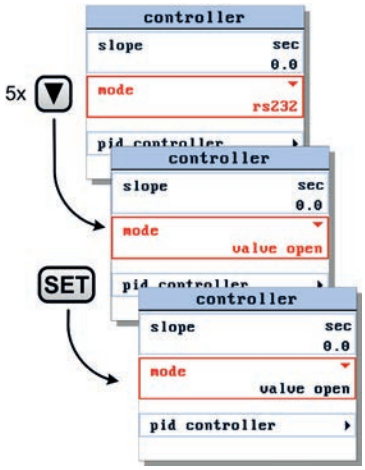
Pressing SET after changing the final character will confirm your input, the value will be sent to the instrument.

Use the CANCEL button to return to the readout screen.



6.7 Controller mode

Enter the controller settings screen from the settings menu. Use ▼ to select the controller mode parameter and press SET to enter the edit mode.

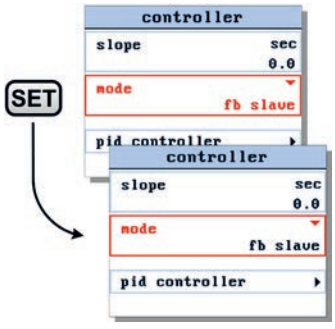


The following controller modes can be selected:

selection	description
analog input	Setpoint via analog input
bus/rs232	Setpoint via bus or RS232 (BRIGHT)
rs232	Setpoint via RS232 only (BRIGHT)
fb ana slave	Setpoint is factor of measure of master on the bus, factor is set by analog input.
analog slave	Setpoint is factor of analog input
fb slave	Setpoint is factor of measure of master on the bus
Actuator steering (actuator output = setpoint)	Setpoint is redirected directly to the actuator with the controller idle
actuator 100%	Setpoint neglected, actuator 100%
actuator 0%	Setpoint neglected, actuator 0%
controller idle	Setpoint neglected, actuator stays in actual position
setpoint 100%	Setpoint is 100 %
setpoint 0%	Setpoint is 0 %
Disabled	Instrument is set to a control mode which is not supported by the BRIGHT

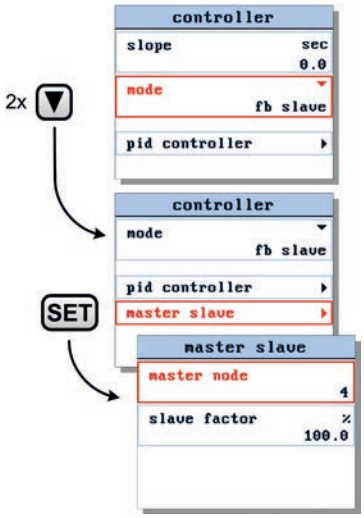
Use ▲ or ▼ to select one of these control modes. Press CANCEL to cancel selection and exit the edit mode without changes

When the required control mode is selected, press SET to confirm.



6.8 Master slave settings

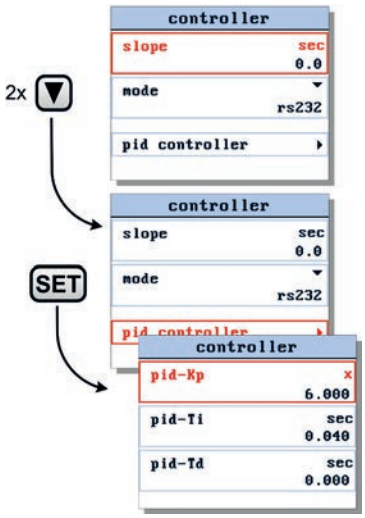
When you select one of the three slave modes the ‘master slave’ option will be added to the controller settings screen.



To enter the master slave settings screen, select the master slave option from the controller settings screen and press SET to enter.

Depending of the selected mode the following parameters can be selected:

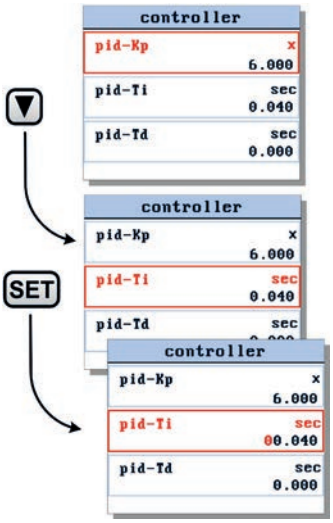
	fb ana slave	analog slave	fb slave
Master node	o		o
slave factor		o	o



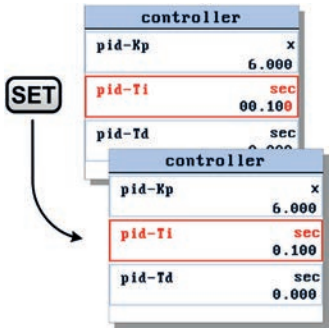
6.9 PID controller settings

You can tune the controller settings by changing the PID parameters. To edit these parameters use the ▼ button to select the 'pid controller' option and press SET again.

You can find more information about these controller settings in the manual: 9.17.023 , This manual is available at the download section of our website: http://www.bronkhorst.com

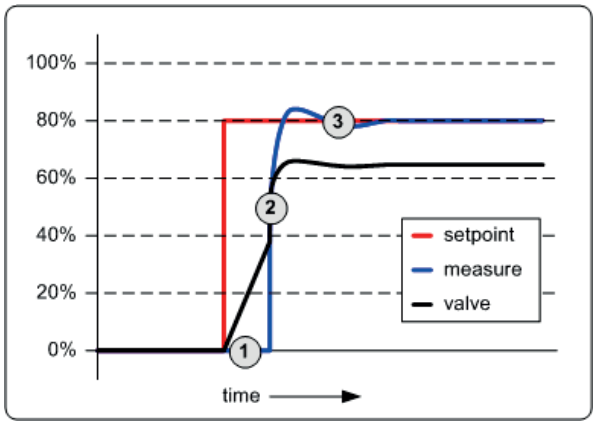


In the pid-controller settings screen you can select one of the PID parameters using the ▲ and ▼ buttons. Press SET to enter the edit mode.



Use the ▲ and ▼ button to edit each character, press SET to select the next character. Press CANCEL to cancel the input and exit the edit mode without changes.

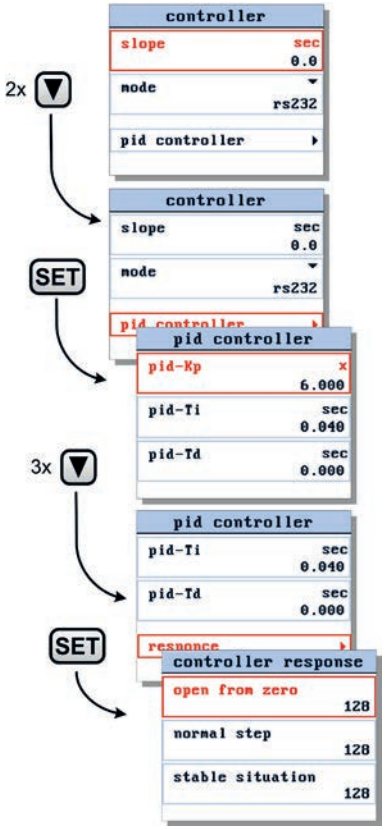
By pressing SET after the final character you will confirm the value. The new value will be sent to the instrument.



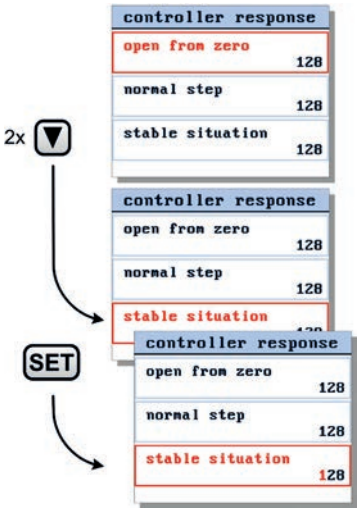
6.10 Controller response settings

The controller response settings can be used to fine tune the controller response. We have defined three control ranges. For each range we defined a parameter to influence the controller speed.

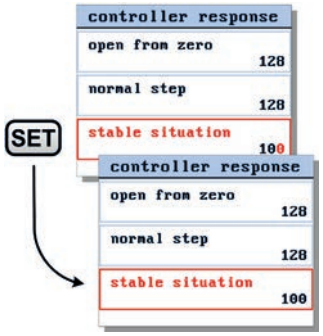
1. Open from zero
2. Normal step
3. Stable situation



To edit these parameters, select the the 'pid controller' and press SET. In the pid controller settings screen select the option response and press SET to enter.



In the controller response settings screen you can select one of the parameters using the ▲ and ▼ buttons. Press SET to enter the edit mode.



In the edit mode, use ▲ and ▼ to change each character. Press SET to select the next character.

Press CANCEL to exit the edit mode without changes.

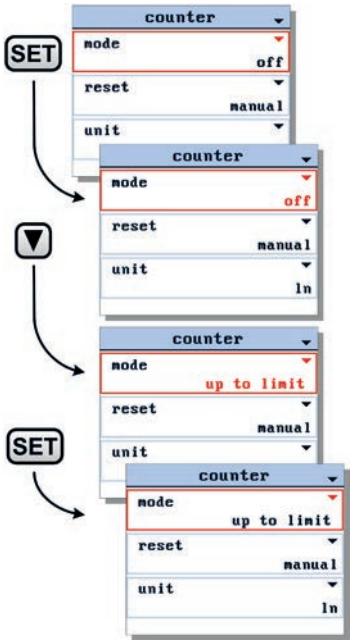
When the final character is changed, press SET to confirm and to exit the edit mode.

6.11 Counter settings screen

From the counter settings screen you can customize the instrument counter. There are three counter modes:

mode	description
off	counter turned off
up	counts up without limit
up to limit	counts up to a programmable limit

Select the counter option from the settings menu and press SET.

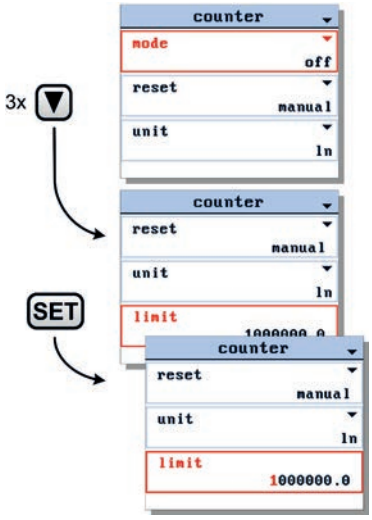


6.12 Set counter mode

When entering the counter settings screen, the counter mode is selected. Press SET to enter the edit mode. Select a counter mode using ▼ and ▲. Press CANCEL to exit the edit mode without changes. Press SET to confirm your selection and exit the edit mode.

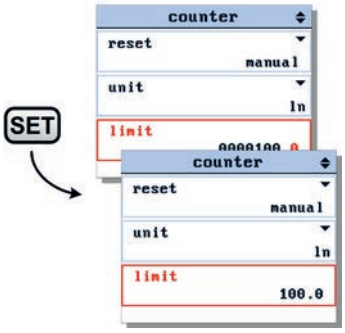
The 'counter' menu is not available for pressure meters or controllers.

You can find more information about these counter settings in the manual: 9.17.023 , This manual is available at the download section of our website: http://www.bronkhorst.com



6.13 Set counter parameters

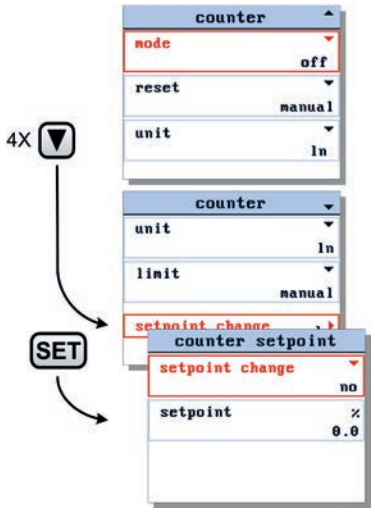
To change one of the counter parameters use the ▲ and ▼ button to select the parameter you want to change and press SET to enter the edit mode.



In the edit mode, use ▲ and ▼ to change each character. Press SET to select the next character.

Press CANCEL to exit the edit mode without changes.

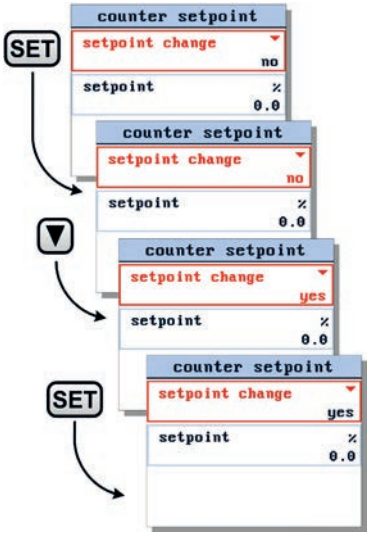
When the final character is changed, press SET to confirm and to exit the edit mode.



6.14 Set setpoint at counter limit

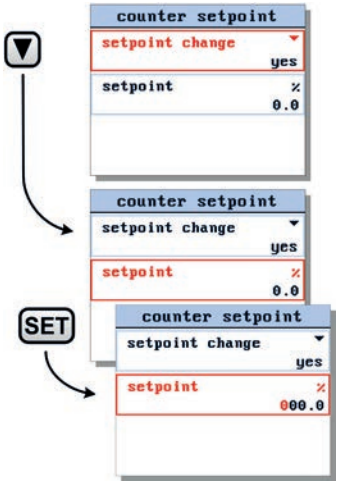
You can program an automatic setpoint which will be activated when the counter limit is reached.

To change this setpoint use ▼ button to select the setpoint change option and press SET to enter the counter setpoint settings screen.

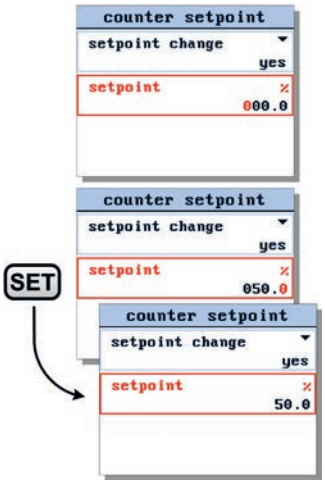


When entering the counter setpoint settings screen the setpoint change parameter is selected. Press SET to enter the edit mode.

In the edit mode, use ▲ and ▼ to select 'yes' or 'no'. Press CANCEL to exit the edit mode without changes. Press SET to confirm your selection and to exit the edit mode.



In the counter setpoint settings screen press ▼ to select the setpoint parameter. Press SET to enter the edit mode.



In the edit mode, use ▲ and ▼ to change each character. Press SET to select the next character.

Press CANCEL to exit the edit mode without changes.

When the final character is changed, press SET to confirm and to exit the edit mode.

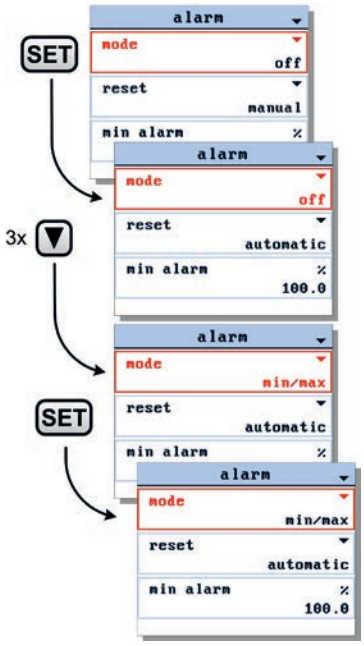
6.15 Alarm settings screen

From the alarm settings screen you can program the instrument alarm settings. There are four alarm modes:

mode	description
off	alarm is turned off.
power-up	alarm will be activated after power-up
response	alarm will be activated above a programmable difference between setpoint and measure
min/max	alarm will be activated below a minimum and/or above a maximum programmable value

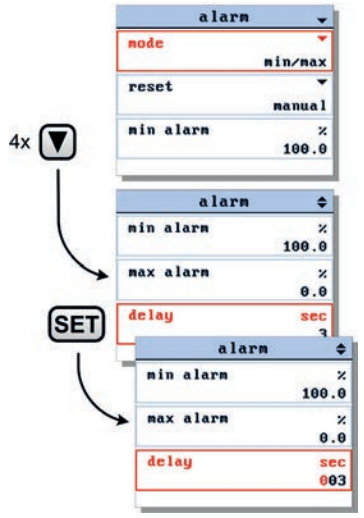
Select the alarm option from the settings menu and press SET.

You can find more information about these alarm settings in the manual: 9.17.023 , This manual is available at the download section of our website: http://www.bronkhorst.com



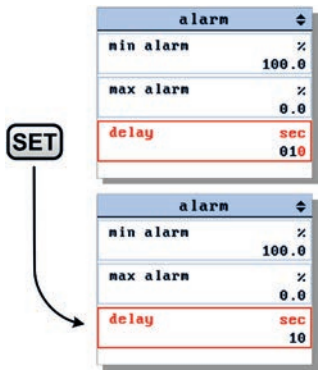
6.16 Set alarm mode

When entering the alarm settings screen the alarm mode is selected. Press SET to enter the edit mode. Select an alarm mode using ▼ and ▲. Press CANCEL to exit the edit mode without changes. Press SET to confirm your selection and exit the edit mode.



6.17 Set alarm mode parameters

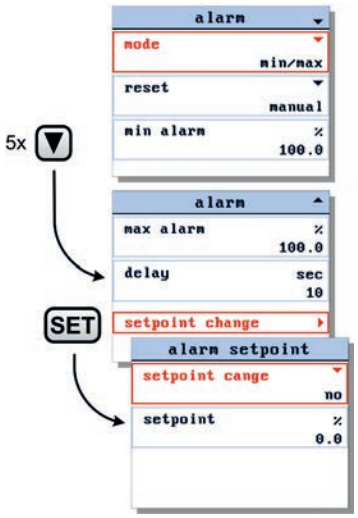
To change one of the alarm mode parameters use the ▲ and ▼ button to select the parameter you want to change and press SET to enter the edit mode.



In the edit mode, use ▲ and ▼ to change each character. Press SET to select the next character.

Press CANCEL to exit the edit mode without changes.

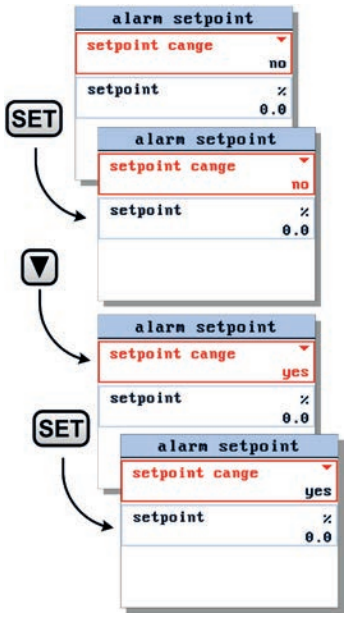
When the final character is changed, press SET to confirm and to exit the edit mode.



6.18 Set setpoint at alarm

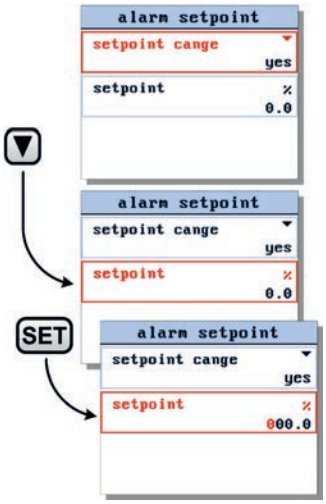
You can program an automatic setpoint which will be activated when an alarm situation occurs.

To change this alarm setpoint use ▼ button to select the setpoint change option and press SET to enter the alarm setpoint settings screen.



When entering the alarm setpoint settings screen the setpoint change parameter is selected. Press SET to enter the edit mode.

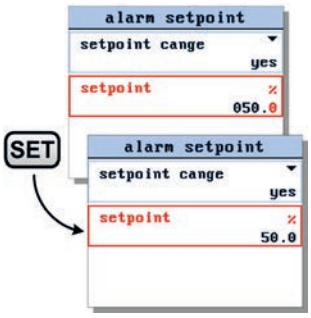
In the edit mode, use ▲ and ▼ to select 'yes' or 'no'. Press CANCEL to exit the edit mode without changes. Press SET to confirm your selection and to exit the edit mode.



In the alarm setpoint settings screen press ▼ to select the setpoint parameter. Press SET to enter the edit mode.

In the edit mode, use ▲ and ▼ to change each character. Press SET to select the next character.

Press CANCEL to exit the edit mode without changes.



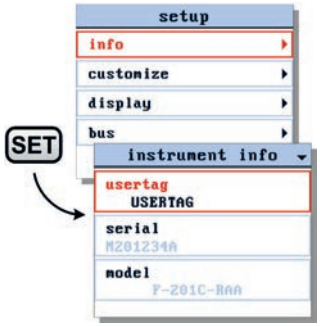
When the final character is changed, press SET to confirm and to exit the edit mode.

6.19 Setup menu

Via the setup menu you can:

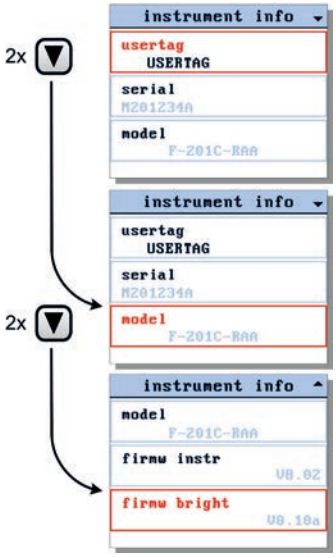
- get information about the connected instrument.
- customize display information
- customize display appearance
- change bus settings when connected to a bus system

Select the setup option from the settings menu and press SET.



6.20 Get instrument information

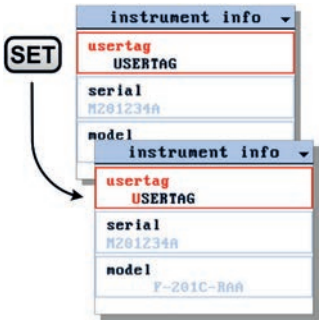
Select the info item in the setup menu and press SET. When entering the instrument info screen the instrument usertag, serial number and model are displayed.



The sign ▼ in the upper right corner indicates that you can scroll through the menu screen items using the ▼ button. Scroll up and down to view:

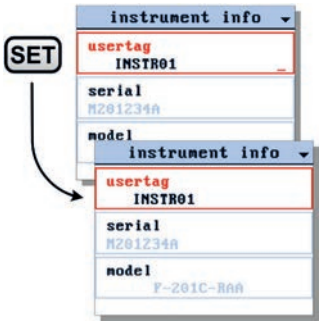
- usertag*
- instrument serial number
- instrument model number
- instrument firmware version
- bright firmware version

*) editable



6.21 Change usertag

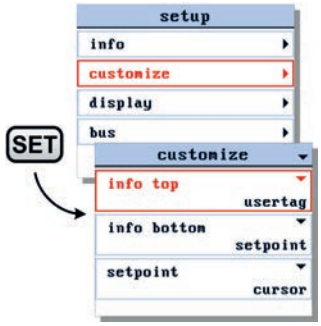
When entering the instrument info screen the usertag parameter is selected. Press SET to enter the edit mode.



In the edit mode, use ▲ and ▼ to change each character. Press SET to select the next character.

Press CANCEL to exit the edit mode without changes.

When the final character is changed, press SET until the cursor disappears to confirm and to exit the edit mode.

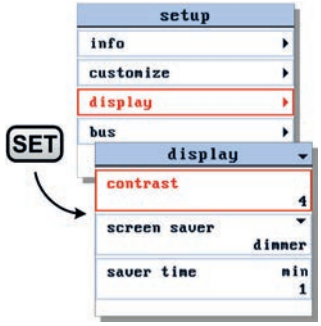


6.22 Customize display info

To customize the display information, select the customize option in the setup menu and press SET.

In the customize menu you can change:

item	description
info top	Info in top line of readout screen, usertag or serial number
info buttom	Info in Custom readout 1.
setpoint	Setpoint edit mode, cursor or steps
read digits	Number of readout digits.



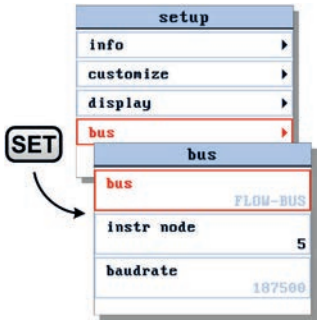
6.23 Display appearance

To customize the display appearance, select the display option in the setup menu and press SET.

Keep contrast and screen saver time low for longer display life-time.

In the display menu you can change:

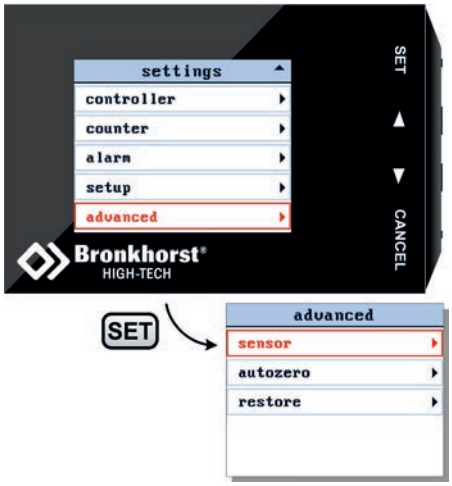
item	description
contrast	display contrast setting
screen saver	screensaver type: dimmer or off
saver time	delay before screen saver becomes active



6.24 Bus settings

When the operating instrument is connected to a bus system you can change the node address of this instrument.

From the setup menu select the bus item and press SET to enter the bus settings screen.

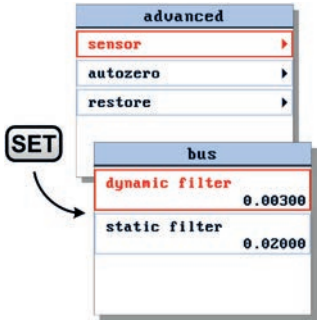


6.25 Advanced menu

From the advanced menu you can:

- change sensor filter settings
- start sensor auto zero procedure
- start restore instrument data procedure

To enter the advanced menu, select the advanced option from the settings menu and press SET.



6.26 Sensor filter settings

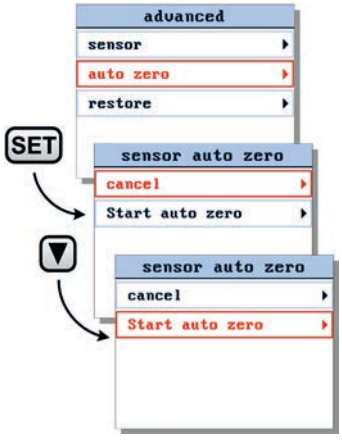
To change the sensor filter settings select the sensor item from the advanced menu and press SET to enter the sensor filter settings screen.

The sensor filter is split into a dynamic and a static part. Use the ▲ and ▼ button to select the dynamic or static parameter and press SET to enter the edit mode.

In the edit mode, use ▲ and ▼ to change each character. Press SET to select the next character.

Press CANCEL to exit the edit mode without changes.

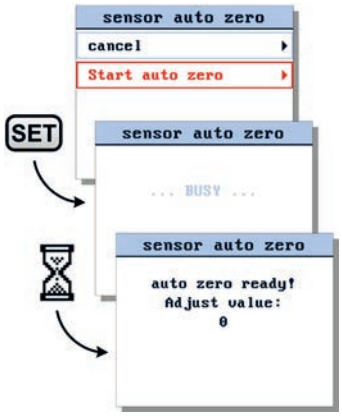
When the final character is changed, press SET to confirm and to exit the edit mode.



6.27 Sensor auto zero

To start the sensor auto zero procedure, select the autozero item from the advanced menu and press SET to enter.

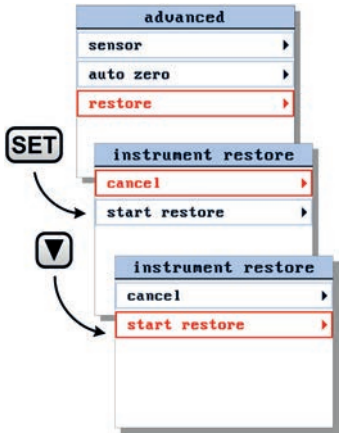
Press ▼ to select the 'start auto zero' option.



Press SET to start the sensor auto zero procedure.

While the auto zero procedure is active, the BRIGHT will show the message 'busy'. When finished, 'auto zero ready'.

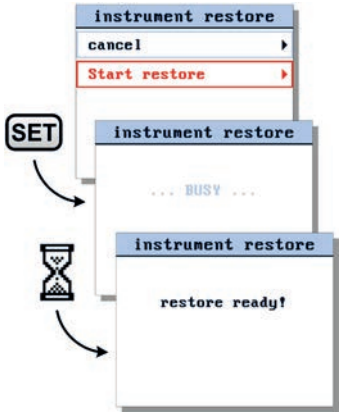
Press any key to return to settings menu.



6.28 Restore instrument settings

To start the instrument restore procedure, select the restore option from the advanced menu and press SET to enter.

Press ▼ to select the 'start restore' option.



Press SET to start the instrument restore procedure.

While the restore procedure is active, the BRIGHT will show the message 'busy'. When finished, 'auto restore ready'.

Press any key to return to settings menu.

7 Security Settings

7.1 Security modes

The security settings screen allows you to define the access of the crucial menu items of the BRIGHT. For every item, you can choose the following access modes:

item	accessibility
enable	Item is accessible without any restrictions
passw	item is accessible after entering a password
disable	Item is not accessible

7.2 Enter the security settings screen

From the readout screen press both ▲ and ▼ for 5 seconds till the 'enter password' display appears.

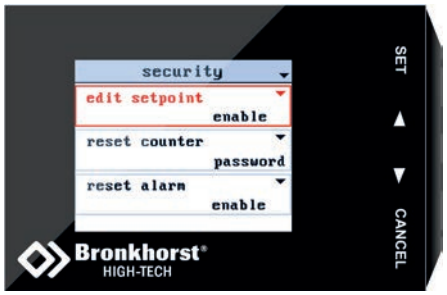
The default password is 'abc'. The password can consist of a maximum of 8 characters. For less characters press SET till the end of the edit field. Please refer to chapter "Change Password" on page **34** to change password.

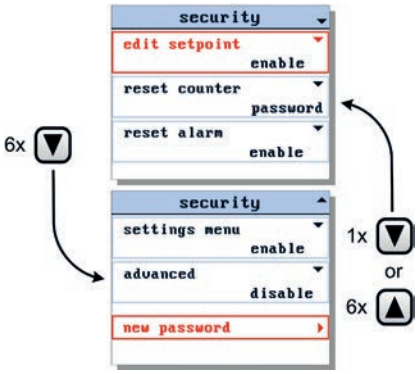
If you enter a wrong password, the following message will appear.

If necessary, refer to chapter "Reset Password" on page **35**, to reset the password to it's default value.

7.3 Security items

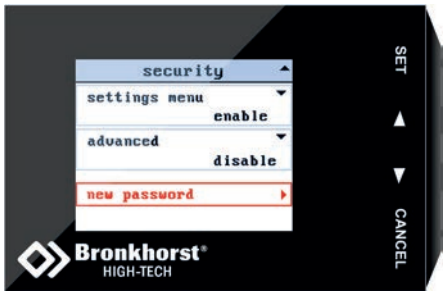
When you enter the 'Security' menu, the following display will appear.





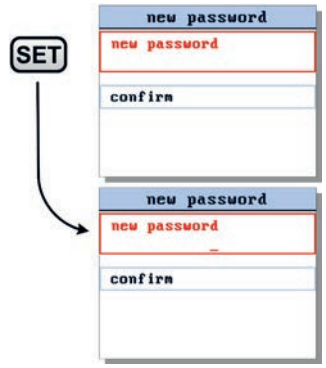
The ▼ or ▲ signs in the upper right corner indicates that you can scroll this menu using the ▲ and ▼ buttons to select more items. The accessibility of following items can be set:

item	accessibility
edit setpoint	edit mode of the setpoint in both custom readout 1 and 2
reset counter	counter reset in custom readout 2.
reset alarm	alarm reset displayed in custom readout 2.
select instrument	selecting another instrument on the flowbus.
settings menu	settings menu
advanced	advanced submenu in the settings menu



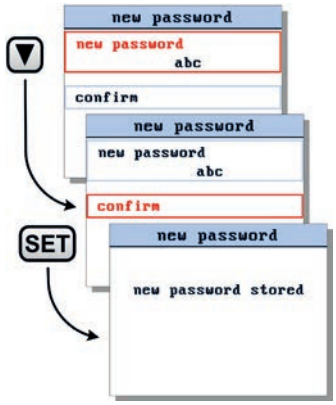
7.4 Change Password

To change the password, select the option 'new password' and press SET.



This will open the 'new password' input display. Press SET again to enter the new password edit mode.

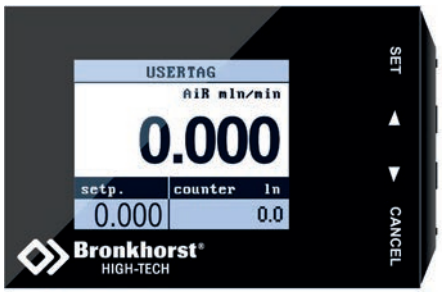
You can enter a maximum of 8 characters. For less characters, press SET till the end of the edit field.



After changing the password press ▼ to select 'confirm'. Then press SET.

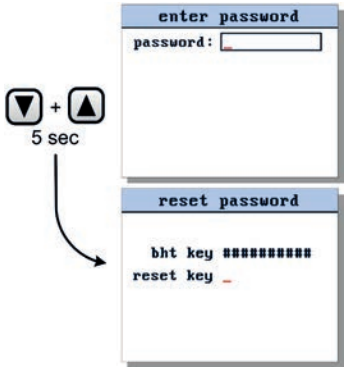
Now the new password is stored and should be used to enter the password protected items.

Press any key to return to security settings screen.



7.5 Reset Password

From the readout screen press both ▲ and ▼ for 5 seconds till the 'enter password' display appears.



Again press both ▲ and ▼ for 5 seconds till the 'reset password' display appears.

The 'reset password' display will show a 10 character long bht key. This is your encrypted password. Send this key to your local agency and they will send you, after validation of your request, a reset key. Enter this 10 character reset key in the reset key field. The password will now be reset to it's default value 'abc'.

Press any key to return to the readout screen.

To avoid unauthorized access change password. See Chapter Change Password on page **34**.

If you enter the wrong key, the following message will appear.

Check the key and try again.

Press any key to return to the readout screen

8 Troubleshooting

Symptom	Possible cause	Action
No output signal	• No power supply	Check power supply
	• PCB failure	Check cable Return to factory
	• Actuator blocked	Clean actuator (qualified personnel only)
	• Filter or screen blocked	Clean filter or screen
	• Sensor failure	Return instrument to factory
Maximum output signal	• PCB failure	Return instrument to factory
	• Sensor failure	Return instrument to factory
Control mode shows Disabled	• Instrument is set to a control mode which is not supported by the BRIGHT	Set the instrument to a supported control mode (by means of micro-switch)
High setpoint vs. output offset	• PCB failure	Return instrument to factory
	• Actuator blocked	Clean actuator (qualified personnel only)
	• Stoppage	Remove cause
	• Pressure not correct	Check pressure
Signal lower than expected	• System stoppage	Remove cause
Flow is gradually decreasing	• (Gas) Condensation	Decrease supply pressure or increase temperature
	• Actuator adjustment has changed	Check actuator adjustment
	• Controller adjustment wrong	Check controller setting
Oscillation	• Input pressure wrong	Adjust pressure
	• Actuator damaged	Check actuator
	• Volume / tubing between controller and pressure controller too small/ short	Improve situation
	• Wrong controller settings	Check controller settings
Small flow occurs when actuator is supposed to be closed	• Actuator is leaking	Check actuator
Parameter not available	• Parameter is not supported by the connected instrument.	
Setpoint is neglected	• Instrument has wrong controller mode	Set controller mode to ‘digital input’
	• Alarm- or counter limit reached	Reset alarm
Settings menu not accessible	• Security mode ‘blocked’ or ‘menu’	Change security mode
Display showing - - - -	• Number to large	Choose suitable unit

Before switching on power, check if all connections have been made according to the hook-up diagram. The hook-up diagrams are available at the download section of our website: http://www.bronkhorst.com

LED indications can be very useful in case of problems with the instrument. See the “MANUAL INTERFACE: micro-switch and LED’s” section in the manual “Operation instructions digital instruments (document nr. 9.17.023)”. This manual is available at the download section of our website: http://www.bronkhorst.com

Contact Bronkhorst® local sales representative or send e-mail describing your problem to: **support@bronkhorst.com**

9 Technical Data

- ✓ 1.8” colour TFT display with a 128x160 pixel resolution
- ✓ 100 MHz Processor
- ✓ 15..24Vdc 0.6W Power Consumption
- ✓ RS232 38k4 communication
- ✓ Operating temperature 0..50°C
- ✓ Dimensions: 73mm width x 50mm height x 23mm depth
- ✓ Weight: approx. 50g

10 Service

For current information on Bronkhorst® and service addresses please visit our website:

http://www.bronkhorst.com

Do you have any questions about our products? Our Sales Department will gladly assist you selecting the right product for your application. Contact sales by e-mail:

sales@bronkhorst.com

For after-sales questions, our Customer Service Department is available with help and guidance.
To contact CSD by e-mail:

support@bronkhorst.com

No matter the time zone, our experts within the Support Group are available to answer your request immediately or ensure appropriate further action. Our experts can be reached at:

+31 859 02 18 66

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