NexusValve BC3

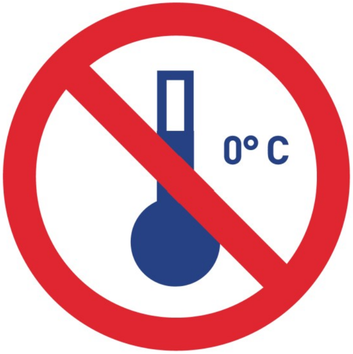
Balancing Measuring Device

User Guide for Mobile Devices with iOS

NexusValve
BC3

NexusValve BC3 version 01.02

CAUTION!



FROST SENSITIVE
DEVICE

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Introduction

The NexusValve BC3 instrument is designed for hydraulic balancing of heating and cooling systems. It allows measuring static pressure, differential pressures and flow in the said systems. Using the differential pressure measured by the measuring component in the system, NexusValve BC3 calculates the flow that runs through the component (balancing valve or measuring orifice). The application corrects the calculated flow also for anti-freeze mixes in cooling systems. The flow can be measured in all branches of the whole hydraulic system and the whole system can be balanced.

NexusValve BC3 Instrument Features

The core of the instrument consists of the pressure measuring unit that measures pressure in balancing components of hydronic systems and sends the measured values to the Bluetooth Low Energy (hereinafter just BLE) technology in a mobile device with the Android or iOS operating systems. The NexusValve BC3 measuring unit is very robust with a massive heavy-duty frame that can withstand a fall from 2 meters. Inside the measuring unit, there is a hydraulic section with a built-in symmetrical differential sensor for accurate digital processing of measured data. The NexusValve BC3 measuring instrument is very accurate and this accuracy is based on:

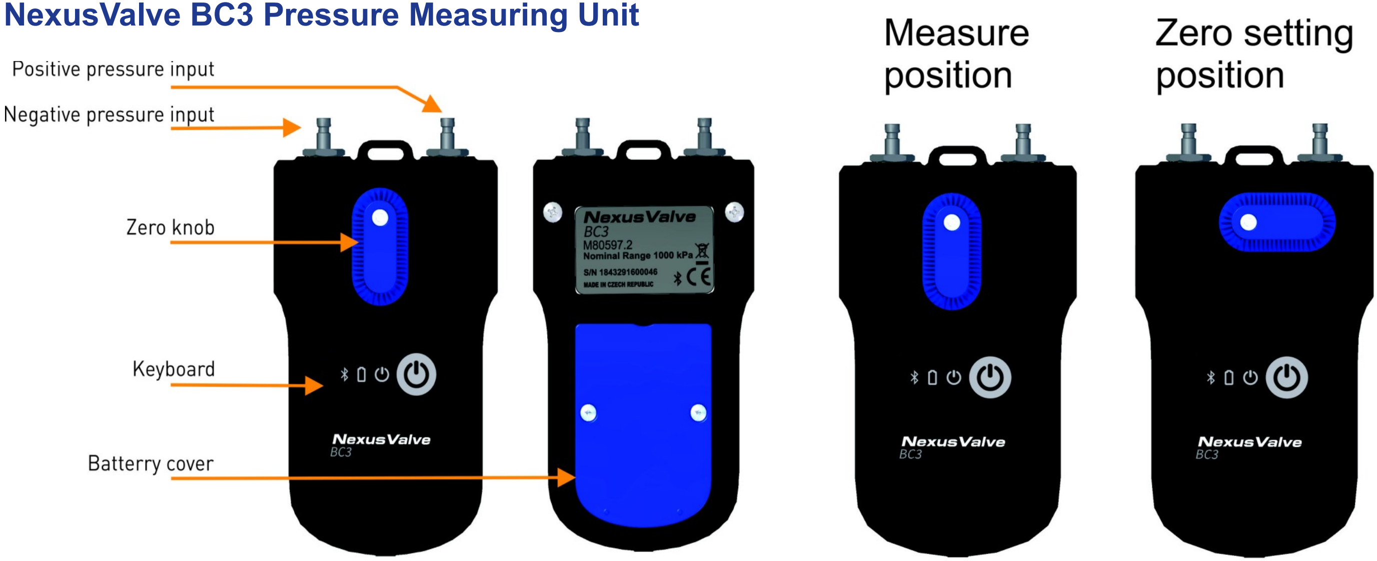
- Very accurate measuring of the pressure with a fully differential pressure sensor and 24-bit processing of data from the pressure sensor
- Possibility of resetting the differential pressure for pressure measuring of very low differential pressures. The resetting of measuring is done at the hydraulic bypass of pressure inputs.

The NexusValve BC3 instrument uses advanced digital technologies that compensate inaccuracies usually occurring in pressure measuring, such as temperature dependencies and measuring non-linearity.

Another feature of the NexusValve BC3 instrument consists in recording measurements. Data from measuring can be recorded independently and directly in the pressure measuring unit. The measuring unit is equipped with a time circuit that allows programming a periodical recording of measurement independently on the application in the mobile device. Once the recording is complete, the measuring unit turns off and the record remains stored in the measuring unit until the application reads it out. Another method of recording consists in recording of current values directly into the mobile device.

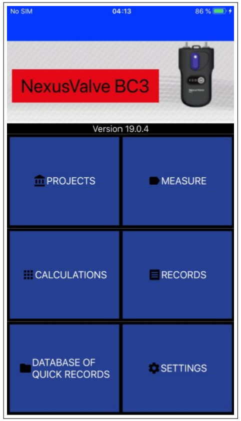
Using the BLE transmission, the NexusValve BC3 application communicates with the measuring unit; a user-friendly interface can be handled via the user mobile device. The application processes pressure values and allows displaying the flows in the measured system based on features of balancing components stored in the mobile device's storage. The application stores in the mobile device's storage balancing valves of most leading European producers. If, incidentally, a valve in not contained in the application, you can enter the valve's Kv and the application will calculate the flow from this value.
You can handle the software by direct touching required fields, or you can use the menu in the upper section of the screen.

NexusValve BC3 Pressure Measuring Unit


Positive pressure input
Negative pressure input
Zero knob
Keyboard
Batterry cover
NexusValve BC3
M80597.2
Nominal Range 1000 kPa
S/N 1843291600046
MADE IN CZECH REPUBLIC
NexusValve BC3
Measure position
Zero setting position
NexusValve BC3
NexusValve BC3

NexusValve BC3 application installation

Find in App Store the NexusValve BC3 application and install it in your mobile device.

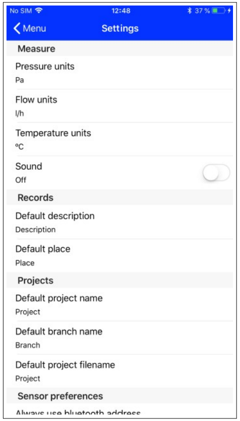

No SIM
04:13
86 %
NexusValve BC3
Version 19.0.4
PROJECTS
MEASURE
CALCULATIONS
RECORDS
DATABASE OF QUICK RECORDS
SETTINGS

NexusValve BC3 Application Main Display

Start the NexusValve BC3 application.

Application Setup

Press the *Setup* button in the introductory window where you can set up the initial features of the application.
In the ***Measuring*** section, these are units for measuring *the pressure, flow and temperature.* Further, you can turn on/off here the sound for the whole NexusValve BC3 application.
Turn on/off the sound in the NexusValve BC3 application by pressing the *Sound* button.
In the ***Records*** section, you can enter Initial description, Initial record location.
In the ***Projects*** section, you can enter Initial project name, Initial branch name, Initial project file name.
In the ***Sensor preferences***, the Bluetooth address of the pressure unit is stored after activating the ***Always use the selected device*** option in


No SIM
12:48
37 %
Menu
Settings

Measure

Pressure units
Pa

Flow units
l/h

Temperature units
°C

Sound
Off

Records

Default description
Description

Default place
Place

Projects

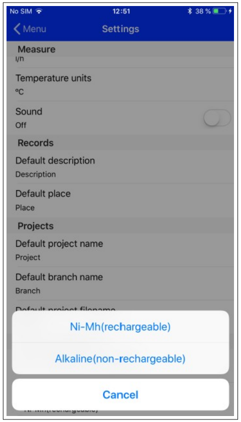
Default project name
Project

Default branch name
Branch

Default project filename
Project

Sensor preferences

Always use bluetooth address


No SIM
12:51
38 %
Menu
Settings

Measure
l/h

Temperature units
°C

Sound
Off

Records

Default description
Description

Default place
Place

Projects

Default project name
Project

Default branch name
Branch

Default project filename

Ni-Mh(rechargeable)
Alkaline(non-rechargeable)
Cancel

Measuring. After the application installation is complete, this item remains empty. When you will be measuring with the automatic connection of one unit without searching and you will want to connect another pressure unit, you must delete this field.
Once the ***Battery type*** is selected, enter the used AAA battery type in the pressure unit. This setup is very important for the correct calculation a display of the battery condition indication. You can find the battery type on the battery. Almost all rechargeable batteries sized AAA are of the NiMH type. Well-known and of high quality are Eneloop batteries from Panasonic.

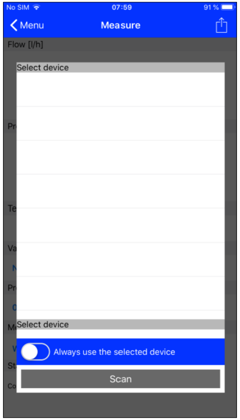
Pressure Unit Turn-on

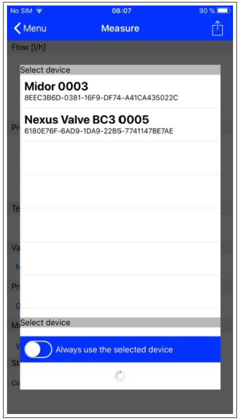
Warning! Very important!

When switched on, the instrument initialises itself. This take several seconds and the green light indicator on the instrument is flashing quickly during the initialisation. Do not establish the Bluetooth connection with the measuring instrument until this light indicator stops flashing and is on steadily. If the green light indicator fleshes with 1 second period, there is an error in the BLE module initialisation. Try to switch off the instrument, wait for several seconds and turn it on again.

Measuring

Once the ***Measuring*** button is selected, a window is displayed on the introductory screen for searching and connecting with the measuring unit. After the ***Scan*** button is pressed, the NexusValve BC3 application will search for and display available NexusValve BC3 devices. Select your NexusValve BC3 unit from the displayed list using the last four digits of the serial number and confirm the option by pressing the ***Connect*** button. This function occurs in many other places in the NexusValve BC3 application. If you check the ***Always use the selected device*** option, the NexusValve BC3 application will connect with this unit automatically and will not search for any other**.** Once the ***Measuring*** button is pressed, the ***Measuring*** screen will appear straight away.

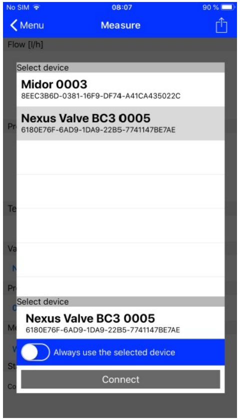

No SIM
07:59
91 %
Menu
Measure
Flow [l/h]
Select device
Select device
Always use the selected device
Scan


No SIM
08:07
90 %
Menu
Measure
Flow [l/h]
Select device
Midor 0003
8EEC3B6D-0381-16F9-DF74-A41CA435022C
Nexus Valve BC3 0005
6180E76F-6AD9-1DA9-22B5-7741147BE7AE
Select device
Always use the selected device

You can cancel the ***Always use the selected device*** from the Application Setup, the ***Sensor Preferences/Always use Bluetooth Address*** option. Here, delete the Bluetooth address of your pressure unit module.

Measuring Window

Based on the differential pressure measured, type of measured medium, its temperature, valve and its preset, the application displays the differential pressure in measuring points of the attached fitting and compute the flow through this fitting.
The status line in the screen’s bottom displays several important pieces of information:
1. The last four digits of the serial number of the pressure unit connected.
2. The percentage status of the battery of the pressure unit connected.
3. The validity of calibration of the pressure unit connected.
4. The firmware version of the pressure unit connected.



Select device

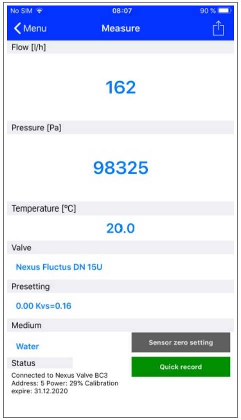
Midor 0003
8EEC3B6D-0381-16F9-DF74-A41CA435022C

Nexus Valve BC3 0005
6180E76F-6AD9-1DA9-22B5-7741147BE7AE

Select device

Nexus Valve BC3 0005
6180E76F-6AD9-1DA9-22B5-7741147BE7AE

○ Always use the selected device



Flow [l/h]
162

Pressure [Pa]
98325

Temperature [°C]
20.0

Valve
Nexus Fluctus DN 15U

Presetting
0.00 Kvs=0.16

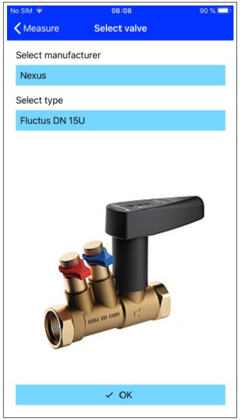
Medium
Water

Status
Connected to Nexus Valve BC3 Address: 5 Power: 29% Calibration expire: 31.12.2020

You can find settings available in the ***Measuring*** window in the context menu after pressing a button. You can find the button in the upper right corner of the screen.

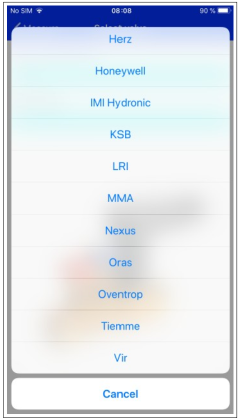
Measuring Context Menu Tabs

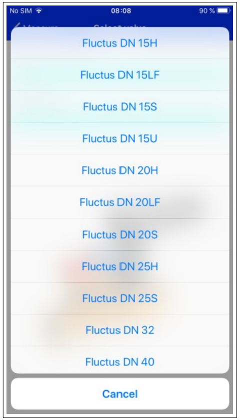
Select Valve


No SIM
08:08
90 %
Measure
Select valve

Select manufacturer
Nexus
Select type
Fluctus DN 15U

✓ OK


No SIM
08:08
90 %
Herz
Honeywell
IMI Hydronic
KSB
LRI
MMA
Nexus
Oras
Oventrop
Tiemme
Vir
Cancel


No SIM
08:08
90 %
Fluctus DN 15H
Fluctus DN 15LF
Fluctus DN 15S
Fluctus DN 15U
Fluctus DN 20H
Fluctus DN 20LF
Fluctus DN 20S
Fluctus DN 25H
Fluctus DN 25S
Fluctus DN 32
Fluctus DN 40
Cancel

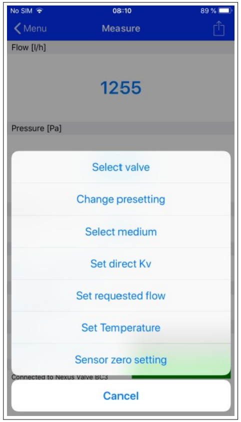
You can select the required valve by pressing the ***Select valve*** selection list.
After clicking on the blue *Manufacturer* line, the list of valve manufacturers contained in the NexusValve BC3 instrument database will open from which you select the manufacturer required by you. The database of valves in the instrument contains valves the world’s leading manufacturers. When selecting the valve and its preset, the Kv values provided by the manufacturer will be used for the flow calculation. The Kv values are recalculated by the mathematical function from manufacturers’ tables.
After clicking on the blue ***Select Type*** line, the list of valves of the given manufacturer will open from which you can select the required valve type. For simpler orientation and selection, also the photo for each valve type will be displayed for you.

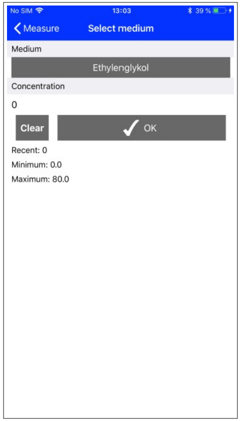
Valve Preset

You can change the valve preset from the ***Change presetting*** selection list.
For every valve, the preset field displays the interval in which you can enter the preset.

Medium

You can select the heat-transfer medium of the measured system by pressing the Select Medium selection list.
If you select as the medium the Ethylenglycol or Propylenglycol ant-freeze mix, you will have to enter the given anti-freeze mix concentration in the Concentration field. Then, the application will recalculate the flow calculation using this value. Also, you can find under the ***Concentration*** field data on the extent in which the concentration can be specified and entered.


No SIM
08:10
89 %
Menu
Measure
Flow [l/h]
1255
Pressure [Pa]
Select valve
Change presetting
Select medium
Set direct Kv
Set requested flow
Set Temperature
Sensor zero setting
Connected to Nexus Valve BC3
Cancel


No SIM
13:03
39 %
Measure
Select medium
Clear
OK

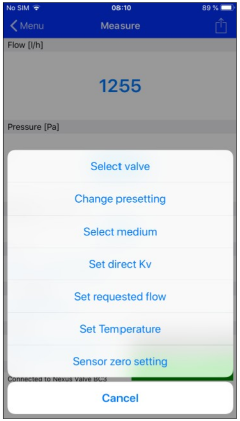
Medium
Ethylenglykol
Concentration
0
Recent: 0
Minimum: 0.0
Maximum: 80.0

Kv Direct Setup

In case the database of valves does not contain the valve you require you can measure the flow using the Kv direct specification.
You can obtain the table with preset values and Kv values from the documentation of the respective valve manufacturer.

Set Requested Flow

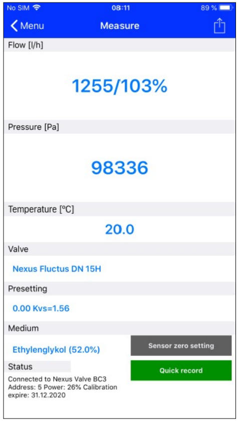
This function is used for displaying the actual/requested flow ratio at the measured valve (the lambda quantity in the proportional balancing method). This way you can easily and quickly set up the requested flow through the valve.
Once the value of requested flow is entered, the flow value in absolute units / the percentage ratio from the previous paragraph will be displayed in the Flow field in the Measuring screen.
If you set up the requested flow value back to zero,the ***Flow*** field in the Measuring window will show just the flow value in absolute units.


No SIM
08:10
89 %
Menu
Measure
Select valve
Change presetting
Select medium
Set direct Kv
Set requested flow
Set Temperature
Sensor zero setting
Cancel

Flow [l/h]
1255

Pressure [Pa]

Connected to Nexus Valve BC3


No SIM
08:11
89 %
Menu
Measure
Sensor zero setting
Quick record

Flow [l/h]
1255/103%

Pressure [Pa]
98336

Temperature [°C]
20.0

Valve
Nexus Fluctus DN 15H

Presetting
0.00 Kvs=1.56

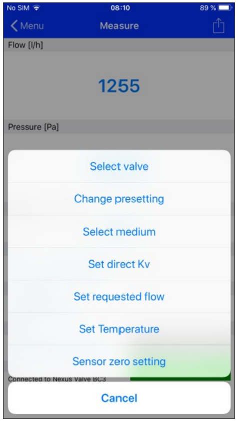
Medium
Ethylenglykol (52.0%)

Status
Connected to Nexus Valve BC3 Address: 5 Power: 26% Calibration expire: 31.12.2020

Medium Temperature

Specify the temperature of the medium in the measured system by pressing the ***Set Temperature***selection list.
Fill in the temperature data manually in the ***Temperature*** field.

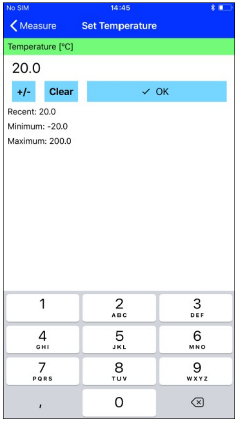
For water medium, the effect of the temperature on the flow calculation is negligible. If an anti-freeze is selected as the medium, the temperature specification is necessary for the flow calculation!!!


No SIM
08:10
89 %
Menu
Measure
Select valve
Change presetting
Select medium
Set direct Kv
Set requested flow
Set Temperature
Sensor zero setting
Cancel

Flow [l/h]
1255

Pressure [Pa]

Connected to Nexus Valve BC3

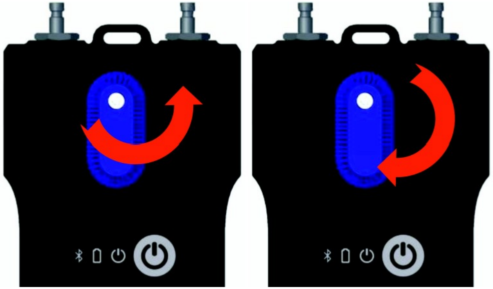

No SIM
14:45
Measure
Set Temperature
+/-
Clear
✓ OK
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
,
0

Temperature [°C]
20.0

Recent: 20.0
Minimum: -20.0
Maximum: 200.0

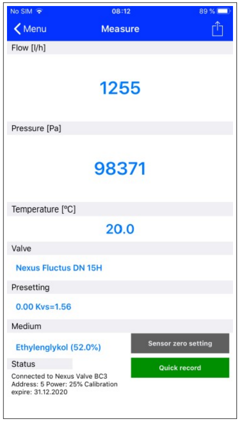
Pressure Measuring Zero, Deaeration of Measuring Hoses

For measuring low differential pressures (under 500 Pa), it is necessary to reset the pressure measuring of the measuring unit.
The reset function will be activated from the ***Sensor zero setting*** selection list. You will be led through the reset procedure by gradually emerging pictures. By rotating the pressure reset knob to the left, the pressure inlets are hydraulically connected and physically there is zero pressure difference between them. In the pressure measuring unit, the zero pressure value is set. Then, turn the reset button to its default position.
The connection of the pressure inlets can also be used to bleed the connection hoses of the measuring unit. For media temperatures above 50 ° C, venting of less than 10 seconds is recommended to avoid unnecessary heating of the pressure unit measuring circuits.

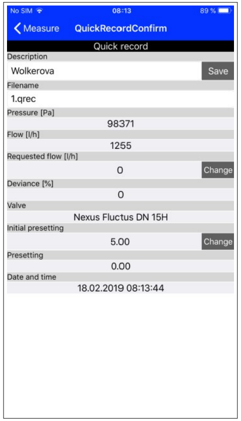


Quick Record

Selecting the Quick Record button navigates to a new window where additional details of the recording such as the name or value of the required flow through can be added in the relevant fields. The initial pressure value on the measured valve prior to recording can also be added. The last field in the Quick Recording window can be populated with the name of the folder where the recording will be saved, if left empty the record will be saved in a default location.



Flow [l/h]
1255
Pressure [Pa]
98371
Temperature [°C]
20.0
Valve
Nexus Fluctus DN 15H
Presetting
0.00 Kvs=1.56
Medium
Ethylenglykol (52.0%)
Status
Connected to Nexus Valve BC3 Address: 5 Power: 25% Calibration expire: 31.12.2020

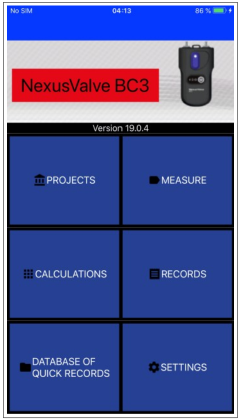


Quick record
Description
Wolkerova
Filename
1.qrec
Pressure [Pa]
98371
Flow [l/h]
1255
Requested flow [l/h]
0
Deviance [%]
0
Valve
Nexus Fluctus DN 15H
Initial presetting
5.00
Presetting
0.00
Date and time
18.02.2019 08:13:44

Projects

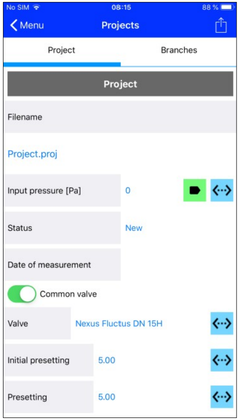
Project Management

The project management in the NexusValve BC3 measuring instrument makes the work in the real technology easier. You can prepare the project you need to measure directly in the NexusValve BC3 measuring instrument. You can then store two values for each branch of the project - the initial status of the branch before balancing and its status after balancing. From the data of the whole project you can then print a report on the project status before balancing and the report on balancing.
For the project measurement you select the respective project and branch. The NexusValve BC3 measuring instrument will set the valve and its preset automatically and you are ready for measuring. The measured data will be again stored automatically in the project’s correct fields.
You can find in the ***Projects*** introductory screen two tabs - ***Projects*** a ***Branches***.

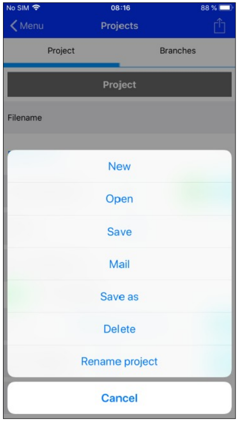

No SIM
04:13
86 %
NexusValve BC3
Version 19.0.4
PROJECTS
MEASURE
CALCULATIONS
RECORDS
DATABASE OF QUICK RECORDS
SETTINGS

Project Window, Project Tab

In the ***Project*** tab, the input data of the project is entered or measured, such as ***Project name***, ***File name*** for storing projects, ***Project input pressure***. If the ***Common valve*** is used in the project, change the position of the sliding button. Then, you have to specify and enter the ***Valve type*** and ***Initial preset***. Once the system is balanced, you can also specify and enter the ***Balanced status preset***.


No SIM
08:15
88 %
Menu
Projects
Project
Branches
Project

Filename
Project.proj
Input pressure [Pa] 0
Status New
Date of measurement
Common valve
Valve Nexus Fluctus DN 15H
Initial presetting 5.00
Presetting 5.00

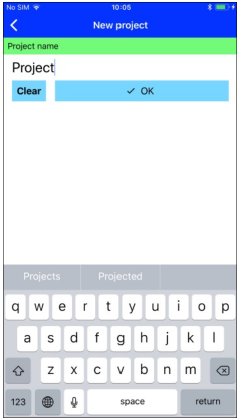

No SIM
08:16
88 %
Menu
Projects
Project
Branches
Project
Filename
New
Open
Save
Mail
Save as
Delete
Rename project
Cancel

Project Context Menu

After clicking on the button in the ***Project*** tab, a selection list is displayed in which you can work with projects - ***New***, ***Open***, ***Save***, ***Mail, Save as, Delete, Rename Project.***

New

Once the ***New*** button is selected from the selection list, a screen is opened in which you specify and enter the new project name. Confirm it with the ***OK*** button.
After that, the introductory Projects screen is reopened which already shows the new file name for storing the new project.


No SIM
10:05
New project
Clear
✓ OK
Projects
Projected
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
123
space
return

Project name: Project

Open

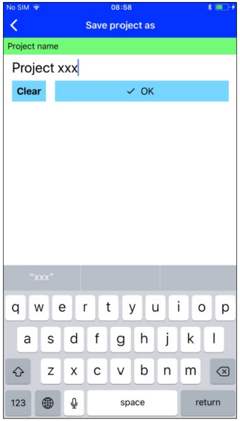
Select from the selection list an already existing project which you want to open.

Save

The selection list, ***Save*** - stores the existing project with the existing name.

Save as

The ***Save as*** selection list, enter the new name for storing the existing project, confirm with the ***OK*** button.


No SIM
08:58
Save project as
Clear
✓ OK
“xxx”
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
123
space
return

Project name: Project xxx

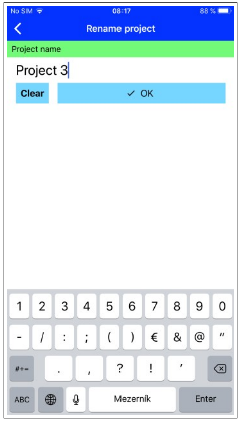
Send Project via Mail

The ***Mail*** selection list. The existing project will be exported in the .xml format and send via Mail.

In order to have this function available, you have to have the Email client application set up in your mobile device. Once this tab is selected, the ***Send Mail*** Email client form is displayed where the project file is already appended. Fill in the recipient's address, the Mail subject, text, and, if appropriate, the signature. The Mail message will be sent off after pressing the ***Send*** button.

Project renaming

The ***Rename Project*** selection list, specify and enter the new project name efort renaming, confirm with the ***OK*** button.



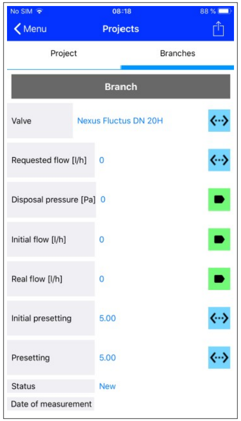
Project name

Project 3

No SIM
08:17
88 %
Rename project
Clear
✓ OK
1 2 3 4 5 6 7 8 9 0
- / : ; ( ) € & @ "
#+= . , ? ! '
ABC
Mezerník
Enter

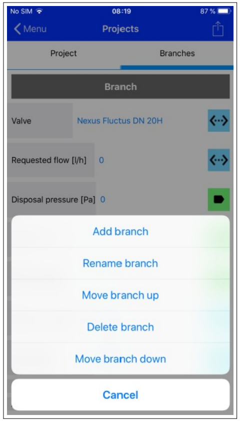
Project Window, Branches Tab

Once the ***Branches*** tab is selected, a screen is displayed where you can set up or measure parameters of individual branches.
In the first field in this screen, you can specify and enter the branch name, or, using an arrow key, you can select the branch you want to be displayed from the existing branches.
In other fields, you can enter the ***Valve*** used in the given branch and specify and enter the ***Flow requested***. The other three fields contain the measured quantities - ***Disposition pressure***, ***Initial flow***, ***Actual flow***. The other two fields are used for specifying and entering two values - ***Initial preset*** and ***Preset***. The remaining fields are filled in automatically.



Valve	Nexus Fluctus DN 20H
Requested flow [l/h]	0
Disposal pressure [Pa]	0
Initial flow [l/h]	0
Real flow [l/h]	0
Initial presetting	5.00
Presetting	5.00
Status	New
Date of measurement	

No SIM
08:18
88 %
Menu
Projects
Project
Branches
Branch



Valve	Nexus Fluctus DN 20H
Requested flow [l/h]	0
Disposal pressure [Pa]	0

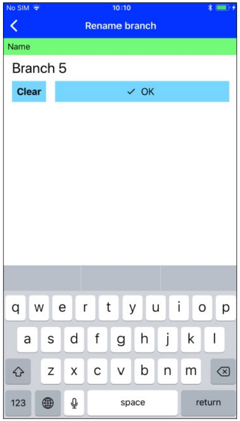
No SIM
08:19
87 %
Menu
Projects
Project
Branches
Branch
Add branch
Rename branch
Move branch up
Delete branch
Move branch down
Cancel

Branch Context Menu

After clicking on the button in the Branches tab, the ***Branch context menu*** selection list is displayed. Here, you can work with branches: ***Add branch***, ***Rename branch***, ***Relocate branch up***, ***Delete branch***, ***Relocate branch down***

Rename Branch

The ***Rename branch*** selection list: A screen is opened in which you specify and enter the branch new name and confirm with the ***OK*** button.



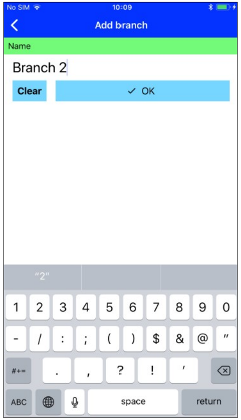
Rename branch

Name: Branch 5

No SIM
10:10
Clear
✓ OK
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
123
space
return

Add Branch

The ***Add branch*** selection list: A screen is opened in which you specify and enter the new branch name and confirm with the ***OK*** button.



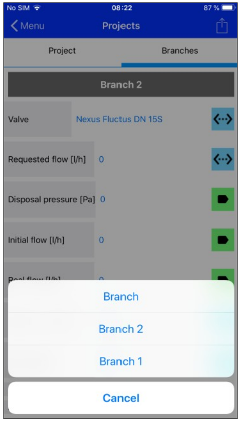
Add branch

Name: Branch 2

No SIM
10:09
Clear
✓ OK
"2"
1 2 3 4 5 6 7 8 9 0
- / : ; ( ) $ & @ "
#+=
. , ? ! '
ABC
space
return

Move Branch up

The ***Move branch up*** selection list: You can relocate the existing branch one place up in the list of branches. You can verify this in the list of branches by selecting the arrow at the branch name.



Projects

Branch 2

Valve: Nexus Fluctus DN 15S

Requested flow [l/h]: 0

Disposal pressure [Pa]: 0

Initial flow [l/h]: 0

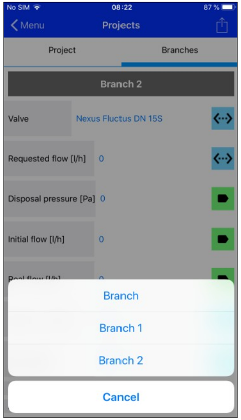
No SIM
08:22
87 %
Menu
Project
Branches
Branch
Branch 2
Branch 1
Cancel

Delete Branch

The ***Delete branch*** selection list: You can delete the branch which is currently being edited.

Move Branch Down

The ***Move branch*** down selection list: You can relocate the existing branch one place down in the list of branches. You can verify this in the list of branches by selecting the arrow at the branch name.



Valve Nexus Fluctus DN 15S

Requested flow [l/h] 0

Disposal pressure [Pa] 0

Initial flow [l/h] 0

Real flow [l/h] 0

Recording

The NexusValve BC3 pressure unit is equipped with the function of independent periodical data recording. This function may make the project diagnostics easier especially for irregular or long-time processes.

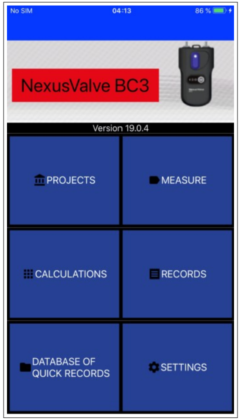
The recorded data contains the record description, date, time, selected valve, valve preset, medium, temperature of the medium while recording, pressure and flow. Recordings can be read into the mobile device and further exported and analysed in tables or diagrams. Last but not least, tables and diagrams can be printed from the data exported like this and reports compiled on the hydraulic system balancing.

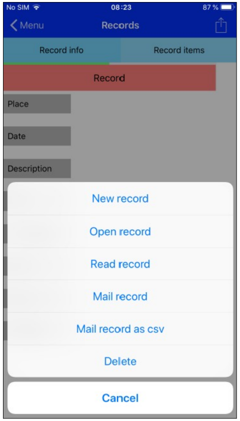
You can find two tabs in the introductory Recordings screen - ***Record info*** and ***Record items***.

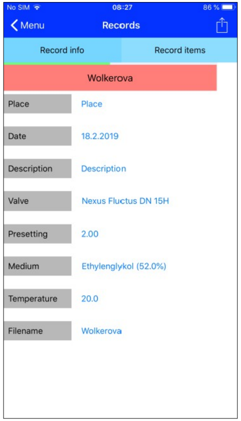
Record Info Tab

After clicking on the button, the ***Record Info context menu*** is displayed where you can work with records using respective tabs - ***Add new record***, ***Open record***, ***Save record as***, ***Read record***, ***Send record via Mail***, ***Delete record***.

Record info Context Menu


No SIM
04:13
86 %
NexusValve BC3
Version 19.0.4
PROJECTS
MEASURE
CALCULATIONS
RECORDS
DATABASE OF QUICK RECORDS
SETTINGS

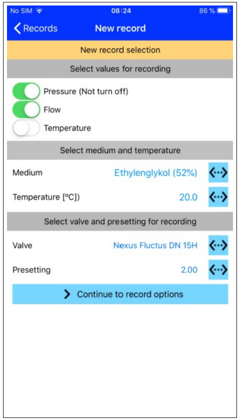

No SIM
08:23
87 %
Menu
Records
Record info
Record items
Record
Place
Date
Description
New record
Open record
Read record
Mail record
Mail record as csv
Delete
Cancel

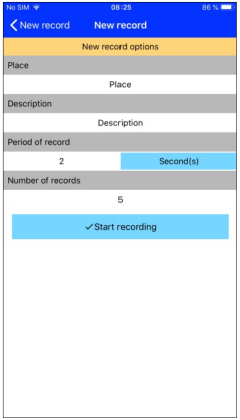

No SIM
08:27
86 %
Menu
Records
Record info
Record items
Wolkerova

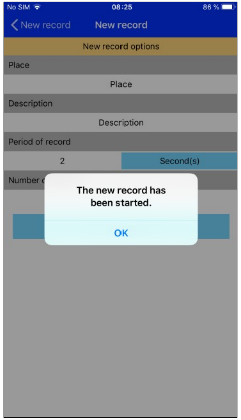
Place	Place
Date	18.2.2019
Description	Description
Valve	Nexus Fluctus DN 15H
Presetting	2.00
Medium	Ethylenglykol (52.0%)
Temperature	20.0
Filename	Wolkerova

New Record

From the ***New*** selection list, a screen is open where you can select what quantities you want to record. The pressure recording is always mandatory and cannot be deactivated. Once the quantities to be stored are selected, you select the medium and its initial temperature in the two subsequent fields. The last two fields of this screen are designed for specifying and entering the valve on which you are measuring and its preset. Confirm the entry by the ***Continue to record options*** button. Another screen opens in which you specify and enter the text of the record location and description. The last two fields are used for entering the interval in which the selected quantities should be measured and saved, and how many times the record should be repeated. You can activate new recording by clicking on the ***Start recording*** button.

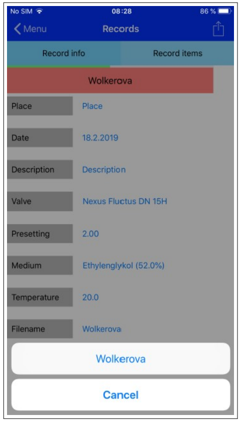

No SIM
08:24
86 %
Records
New record
New record selection
Select values for recording
Pressure (Not turn off) ●
Flow ●
Temperature ○
Select medium and temperature
Medium: Ethylenglykol (52%)
Temperature [°C]): 20.0
Select valve and presetting for recording
Valve: Nexus Fluctus DN 15H
Presetting: 2.00
Continue to record options


No SIM
08:25
86 %
New record
New record
New record options
Place: Place
Description: Description
Period of record: 2 Second(s)
Number of records: 5
✓Start recording


No SIM
08:25
86 %
New record
New record
New record options
Place
Place
Description
Description
Period of record
2
Second(s)
Number
The new record has been started.
OK

Open Record

From the ***Open record*** selection list, a new screen opens in which the list of records stored by the NexusValve BC3 application in the mobile device is shown. Once a record is selected in the list, the screen with data of this record opens, and the data is available for further processing, e.g. to be sent off via Mail. You can see on the ***Record Info*** tab the data from the previous paragraph; the recorded data can be seen on the ***Record items*** tab.

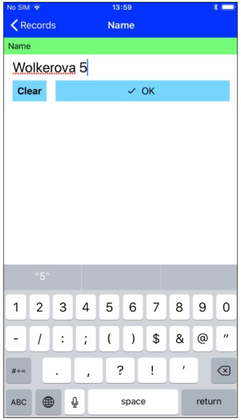

No SIM
08:28
86 %
Menu
Records
Record info
Record items
Wolkerova
Cancel

Wolkerova

Place: Place
Date: 18.2.2019
Description: Description
Valve: Nexus Fluctus DN 15H
Presetting: 2.00
Medium: Ethylenglykol (52.0%)
Temperature: 20.0
Filename: Wolkerova

Read Record

From the ***Read record*** selection menu, you can read a record from the pressure measuring unit. After reading, a line opens into which you have to enter the name under which the record will be stored. The file name extension is added automatically.


No SIM
13:59
Records
Name
Clear
✓ OK
"5"
1 2 3 4 5 6 7 8 9 0
- / : ; ( ) $ & @ "
#+= . , ? ! '
ABC
space
return

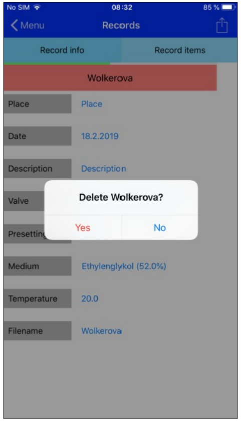
Name: Wolkerova 5

Send Record via Mail

In order to have this function available you have to have the Email client application set up in your mobile device. Once this tab is selected from the Send record via Mail selection list, the ***Send Mail*** Email client form is displayed where the recordings file is already appended. The recording file format is .xml. Fill in the recipient's address, the Mail subject, text, and, if appropriate, the signature. The Mail message will be sent off after pressing the Send button.

Delete Record

From the ***Delete*** selection list, a window is displayed asking whether or not you really want this record deleted. The record is not deleted before the confirmation.

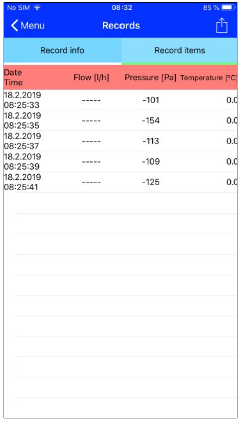

No SIM
08:32
85 %
Menu
Records
Record info
Record items
Wolkerova
Yes
No

Delete Wolkerova?

Place: Place
Date: 18.2.2019
Description: Description
Valve
Presetting
Medium: Ethylenglykol (52.0%)
Temperature: 20.0
Filename: Wolkerova

Record Items Tab

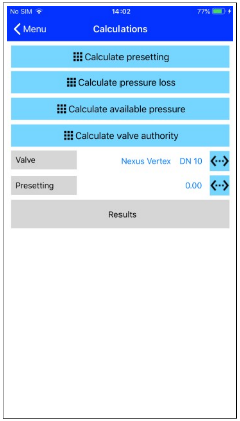
You can read a record from the measuring unit or open a record from the mobile device.
Once the ***Record items*** tab is selected, a screen appears where you can see the measured values along with the time of recording.


No SIM
08:32
85 %
Menu
Records
Record info
Record items

Date Time	Flow [l/h]	Pressure [Pa]	Temperature [°C]
18.2.2019 08:25:33	-----	-101	0.0
18.2.2019 08:25:35	-----	-154	0.0
18.2.2019 08:25:37	-----	-113	0.0
18.2.2019 08:25:39	-----	-109	0.0
18.2.2019 08:25:41	-----	-125	0.0

Heating Engineering Calculations

Heating engineering calculations allow and make easier solutions of partial tasks and calculations in balancing hydraulic systems.
There are the following four calculations in the NexusValve BC3 application:
1. Preset calculation - calculates the valve preset for the flow requested in the current branch.
2. Pressure loss calculation - calculates the pressure loss on the valve for the requested flow and preset.
3. Available pressure calculation - The “available pressure” is understood to be the minimum pressure in the branch after the requested flow is attained for the given preset.
4. Valve authority calculation - The valve authority is the ratio between the pressure drop on the fully


No SIM
14:02
77%
Menu
Calculations
Calculate presetting
Calculate pressure loss
Calculate available pressure
Calculate valve authority
Results

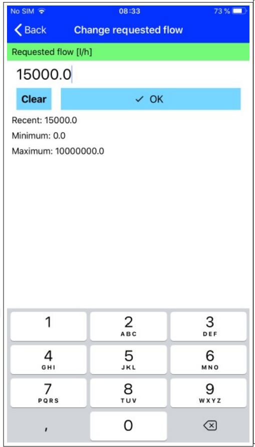
Valve Nexus Vertex DN 10
Presetting 0.00

opened control valve and the pressure in the whole branch in percent. This quantity helps in dimensioning the valve and evaluating whether the given valve is suitable for the branch. For the optimal use of the system regulation, this should be in the range of 50 up to 100%. When this value is less than 50%, the valve is not dimensioned properly.
Press the ***Calculations*** in the application’s main menu. Select the requested valve and its preset in the respective selection fields of the Calculations introductory screen.

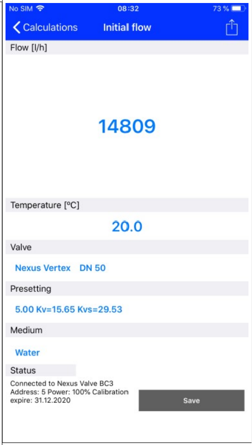
Preset Calculation

It calculates the valve preset in the current branch for the requested flow.

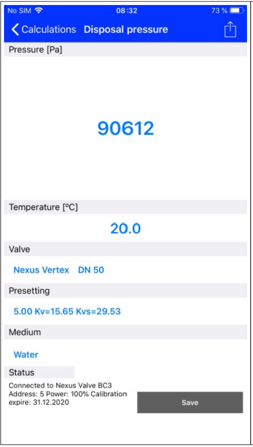
Enter the requested flow in the first ***Preset calculation*** screen and confirm the entry with the ***OK*** button. Confirm with the actual flow with ***Save current measured flow*** button in the next screen. Close fully the control valve in the next screen. Confirm the measured pressure value with the ***Save current disposal pressure*** button. Based on the measured values and the requested flow, the NexusValve BC3 application calculates the needed valve preset and displays the result in the ***Calculations*** window in the ***Results*** section of the screen.


No SIM
08:33
73 %
Back
Change requested flow
Clear
✓ OK
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
,
0

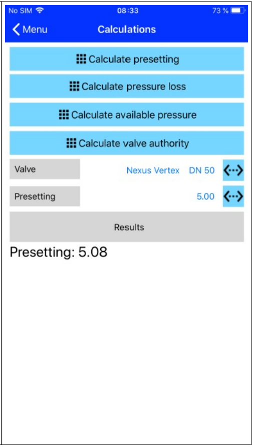
Requested flow [l/h]
15000.0
Recent: 15000.0
Minimum: 0.0
Maximum: 10000000.0


No SIM
08:32
73 %
Calculations
Initial flow
Save

Flow [l/h]
14809
Temperature [°C]
20.0
Valve
Nexus Vertex DN 50
Presetting
5.00 Kv=15.65 Kvs=29.53
Medium
Water
Status
Connected to Nexus Valve BC3
Address: 5 Power: 100% Calibration expire: 31.12.2020


No SIM
08:32
73 %
Calculations
Disposal pressure
Save

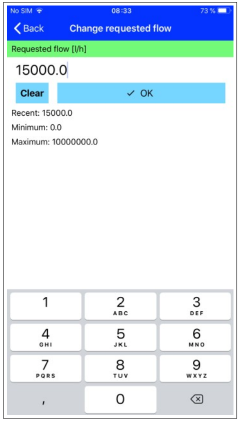
Pressure [Pa]
90612
Temperature [°C]
20.0
Valve
Nexus Vertex DN 50
Presetting
5.00 Kv=15.65 Kvs=29.53
Medium
Water
Status
Connected to Nexus Valve BC3
Address: 5 Power: 100% Calibration expire: 31.12.2020


No SIM
08:33
73 %
Menu
Calculations
Calculate presetting
Calculate pressure loss
Calculate available pressure
Calculate valve authority
Results

Valve Nexus Vertex DN 50
Presetting 5.00
Presetting: 5.08

Pressure Loss Calculation

Enter the requested flow in the first ***Pressure loss calculation*** screen and confirm the entry with the ***OK*** button. The application calculates the pressure loss on the valve with the given preset and requested flow and displays the result in the ***Calculations/Results*** section of the screen.


No SIM
08:33
73 %
Back
Change requested flow
Clear
✓ OK
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
,
0

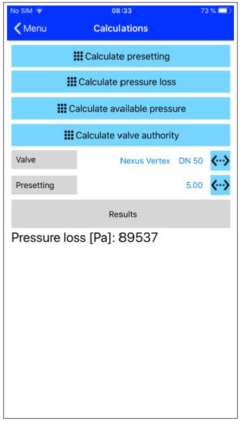
Requested flow [l/h]

15000.0

Recent: 15000.0

Minimum: 0.0

Maximum: 10000000.0


No SIM
08:33
73 %
Menu
Calculations
Calculate presetting
Calculate pressure loss
Calculate available pressure
Calculate valve authority
Results

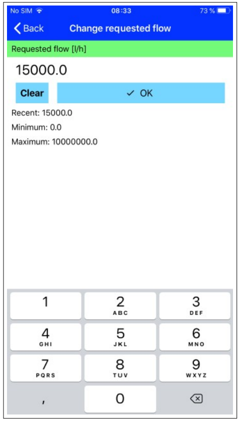
Valve: Nexus Vertex DN 50

Presetting: 5.00

Pressure loss [Pa]: 89537

Available Pressure Calculation

Enter the requested flow in the first ***Available pressure calculation*** screen and confirm the entry with the ***OK*** button. Confirm saving of the current measured flow with the ***Save*** button. Confirm saving of the measured disposal pressure with the fully closed valve with the ***Save*** button in the next screen. The result will be displayed in the ***Calculations/Results*** section of the screen.


No SIM
08:33
73 %
Back
Change requested flow
Clear
✓ OK
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
,
0

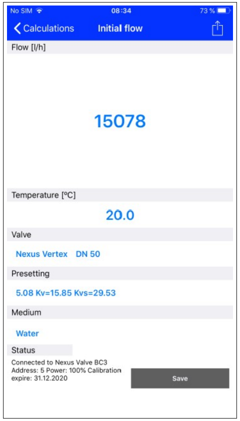
Requested flow [l/h]

15000.0

Recent: 15000.0

Minimum: 0.0

Maximum: 10000000.0


No SIM
08:34
73 %
Calculations
Initial flow
Save

Flow [l/h]

15078

Temperature [°C]

20.0

Valve

Nexus Vertex DN 50

Presetting

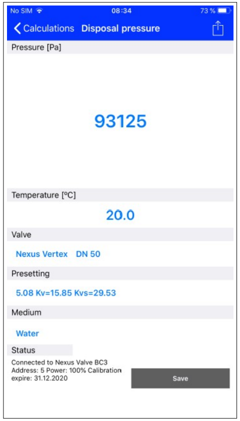
5.08 Kv=15.85 Kvs=29.53

Medium

Water

Status

Connected to Nexus Valve BC3
Address: 5 Power: 100% Calibration expire: 31.12.2020


No SIM
08:34
73 %
Calculations
Disposal pressure
Save

Pressure [Pa]

93125

Temperature [°C]

20.0

Valve

Nexus Vertex DN 50

Presetting

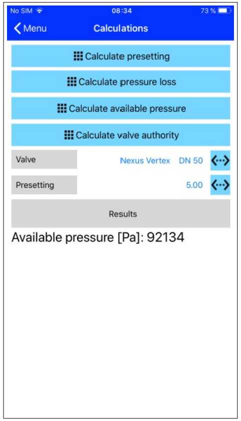
5.08 Kv=15.85 Kvs=29.53

Medium

Water

Status

Connected to Nexus Valve BC3
Address: 5 Power: 100% Calibration expire: 31.12.2020


No SIM
08:34
73 %
Menu
Calculations
Calculate presetting
Calculate pressure loss
Calculate available pressure
Calculate valve authority
Results

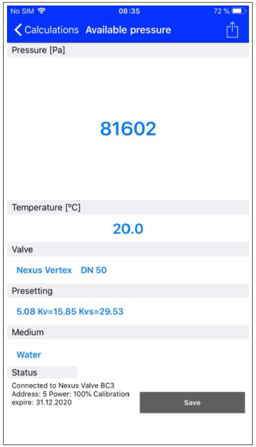
Valve: Nexus Vertex DN 50

Presetting: 5.00

Available pressure [Pa]: 92134

Valve Authority Calculation

Measure the disposal pressure in the first ***Valve authority calculation*** screen with the valve closed, and confirm with the ***Save*** button. Measure the pressure in the next screen with the valve fully open, and confirm with the ***Save*** button. The result will be displayed in the ***Calculations/Results*** section of the screen.


No SIM
08:35
72 %
Calculations
Available pressure
Save

Pressure [Pa]

81602

Temperature [°C]

20.0

Valve

Nexus Vertex DN 50

Presetting

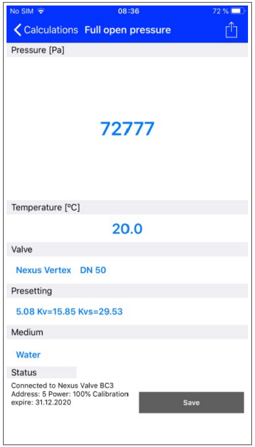
5.08 Kv=15.85 Kvs=29.53

Medium

Water

Status

Connected to Nexus Valve BC3 Address: 5 Power: 100% Calibration expire: 31.12.2020


No SIM
08:36
72 %
Calculations
Full open pressure
Save

Pressure [Pa]

72777

Temperature [°C]

20.0

Valve

Nexus Vertex DN 50

Presetting

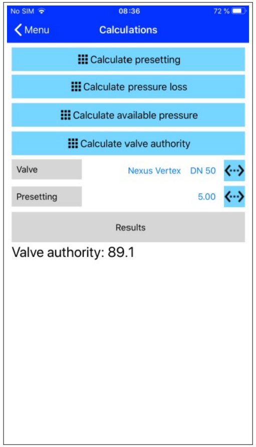
5.08 Kv=15.85 Kvs=29.53

Medium

Water

Status

Connected to Nexus Valve BC3 Address: 5 Power: 100% Calibration expire: 31.12.2020


No SIM
08:36
72 %
Menu
Calculations
Calculate presetting
Calculate pressure loss
Calculate available pressure
Calculate valve authority
Results

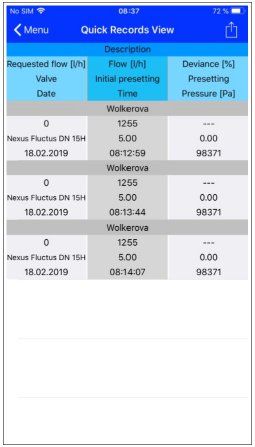
Valve: Nexus Vertex DN 50

Presetting: 5.00

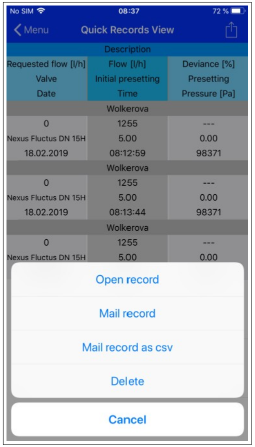
Valve authority: 89.1

Quick Records Database

Selecting the Quick Record Database button navigates to a new window where previously saved recordings from the Quick Recording window can be browsed. Recordings are saved sequentially into one file, unless previously specified to be saved elsewhere. The default file is saved in the Internal Memory/ NexusValve BC3/Quick Records folder. An empty form is displayed upon opening of the Quick Record Database. The required file can then be opened from the Quick Record Database menu using the Open command. The rest of the Quick Record Database menu options are the same as in the menu for standard recordings, which is described under the Recording section.



Description		
Requested flow [l/h]	Flow [l/h]	Deviance [%]
Valve	Initial presetting	Presetting
Date	Time	Pressure [Pa]
Wolkerova		
0	1255	---
Nexus Fluctus DN 15H	5.00	0.00
18.02.2019	08:12:59	98371
Wolkerova		
0	1255	---
Nexus Fluctus DN 15H	5.00	0.00
18.02.2019	08:13:44	98371
Wolkerova		
0	1255	---
Nexus Fluctus DN 15H	5.00	0.00
18.02.2019	08:14:07	98371



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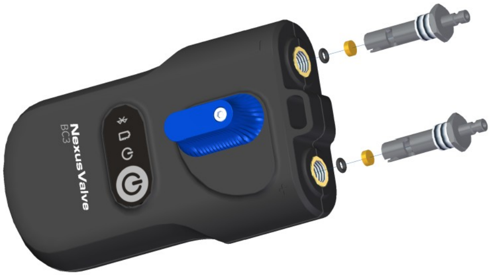
Nexus Fluctus DN 15H	5.00	0.00
18.02.2019	08:13:44	98371
Wolkerova		
0	1255	---
Nexus Fluctus DN 15H	5.00	0.00

Maintenance

Sintered Filters Replacement


NexusValve
BC3

For the correct function of the instrument, replace regularly the sintered filters in the pressure inputs.

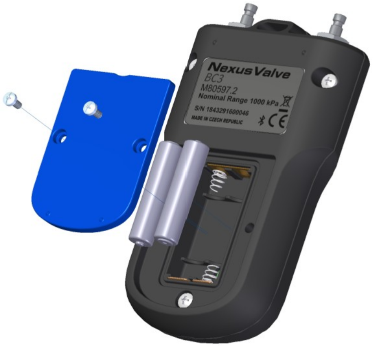
Unscrew the pressure input using the 13 mm wrench, replace the clogged filters with a new set, screw the pressure inputs back and tighten.

Battery Replacement

Unscrew the screws on the battery cover.

Remove the cover and insert new batteries following the technical parameters.

If you insert batteries of a different type, do not forget to change the battery type in the NexusValve BC3 application.


NexusValve
BC3
M80597.2
Nominal Range 1000 kPa
S/N 1843291600046
MADE IN CZECH REPUBLIC

Troubleshooting

Fault	Repair
The instrument cannot be turned on	Check batteries, replace batteries
The green light indicator is fleshing with 1 second period (0.5 of a second is on + 0.5 of a second is off)	The Bluetooth module initialisation is faulty. Turn the instrument off and on.
A slow response to the pressure change in inputs, the measured value when the pressure inputs are free is higher than 1 kPa	The replacement of filters in the pressure inputs. Reset pressure measuring.
The pressure unit Bluetooth search is not functional, or the NexusValve BC3 application is unable to connect with the pressure unit after pressing ***Connect***, refer to the picture on page 9	Check the Mobile device setup. If you have the NexusValve BC3 pressure unit paired with the mobile device, unpair it. BLE does not pairing of the Bluetooth device as the previous version required; quite contrary, the pairing impedes the connection making.
The application does not connect with the pressure unit in the measuring	1)Turn off the pressure unit and Bluetooth in the mobile device. Switch on the

window, the last picture on page 9, or the start or record reading stops	pressure unit and after that Bluetooth in the Mobile device. 2)Turn off the pressure unit and after that make the restart of the Mobile device. Switch on the pressure unit and switch on the Bluetooth in the Mobile device.
I have entered the ***Always use selected device*** option and want to measure with a different pressure unit.	In the NexusValve BC3 application setup go to the ***Sensor setup/Always use Bluetooth address***. Here, you will see the BT module address recorded by your option. Delete the address, and the application will again search through all pressure units.

Safety and Device Disposal Instructions

Batteries

- Incorrect handling with batteries may cause spillage of the electrolyte and fire.
- When disposing of batteries, contact local authorities or dealers and get information on the correct way of disposal.
- Do not expose batteries to heat and fire.
- Do not leave batteries in the car exposed to direct sunshine with windows and doors closed.
- Do not dismantle batteries and short-circuit them.
- Do not use batteries with the packing damaged.
- In case of incorrect replacement of batteries there is the threat of explosion.
- Only use the battery type recommended by the manufacturer for replacement.

Information for Users on Collection and Disposal of Used Devices and Batteries

This symbol on the device, packing or in appended documents means that the used electric and electronic devices cannot be disposed of in the common communal waste.

For correct disposal, recovery and recycling of used products and batteries, please give them over to respective collection locations in compliance with the national legislation and directions 2002/96/EC, 2006/66/EC and 2012/19/EC.

By ensuring the correct disposal of the product you can help prevent from occurring potential dangerous impacts on the environment and human health that would threaten when the product is not disposed of properly.

Commercial users in European Union may contact their dealers or suppliers.

Specifications

Nominal pressure range*	1,000kPa or 2,000 kPa	Power supply	AAA Alkaline batteries or NiMH rechargeable batteries
Max. Overpressure	120% of nominal pressure	Power Consumption	20mA Bluetooth use
Linearity and hysteresis error	0.15% from nominal pressure range	Operating time	45h Max.
Error for the pressure range 0 till 5 kPa after pressure zero setting	± 50 Pa for nominal pressure range 1 MPa	Zeroing of the pressure measurement	Mechanical with hydraulic bypass
	± 100 Pa for nominal pressure range 2 MPa		
Temperature error	0.25% from nominal pressure range	Water Resistance	IP65
Medium temperature**	-5 to 90°C	Calibration Validity	24 months
Ambient temperature	-5 to 50°C	Dimensions (l x w x d)	180x80x52 mm
Storage temperature	-5 to 50°C	Weight	420 g

* optional

** measured at the end of measuring hoses, length 1.5m, Hot water flows through NexusValve BC3 hydraulic parts during Pressure zero procedure. Maximum time duration of zeroing when temperature of the medium exceeds 50°C is 10 seconds.