

1 Use of product

Use this product for computers operated by a Windows ® OS operating system. This software can be operated on following systems:

- Windows® 10

1.1 Technical data

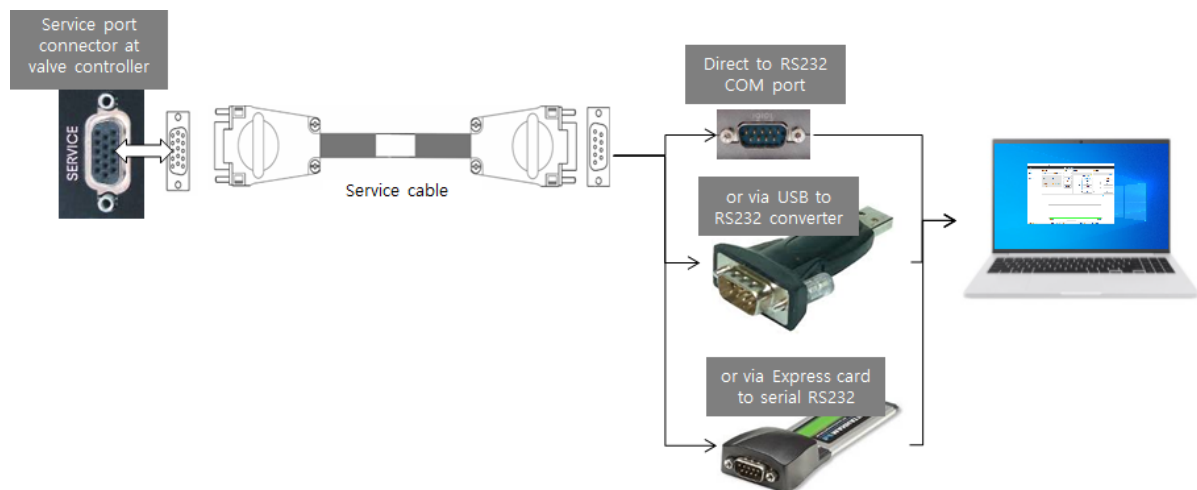
This software requires

- 100MB disk space
- 2GB RAM
- RS232 serial port
- 1024x768 minimum resolution for the display

2 Installation

The provided ZIP file decompresses into your computer. You will see "NVM" folder.

3 Connect Valve to PC

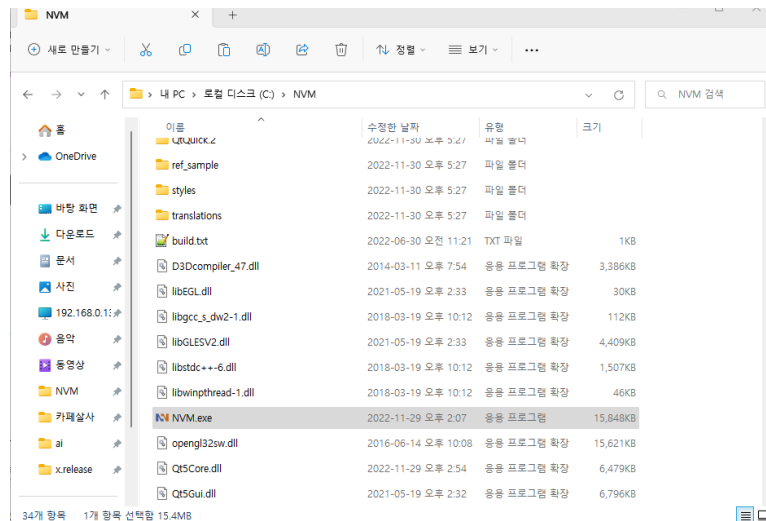


4 Start up

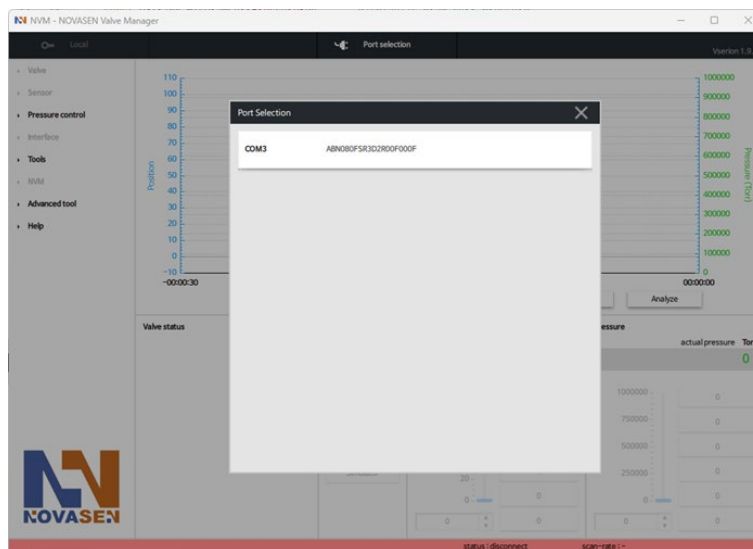
Check whether the PC is connected via the service port to your valve. Make sure, that the valve is supplied by 24VDC.

You need not do any adjustments for the RS232 port in advance. Setup of the RS232-port for the PC is done automatically by NVM Software.

1. Start the program on NVM folder > NVM.exe

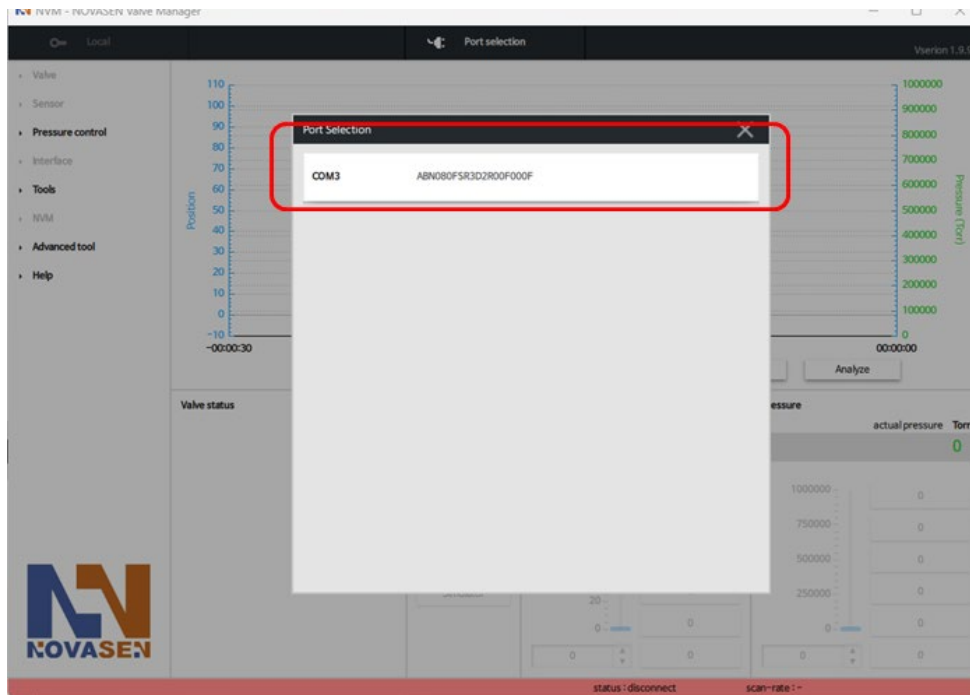


2. After startup is finished, the 'NVM' displays its Startup-screen. (example see below)



5 Connect NVM to valve

Select the port of the valve you want to connect from the port list shown in the pop-up. (double click)



6 General screen

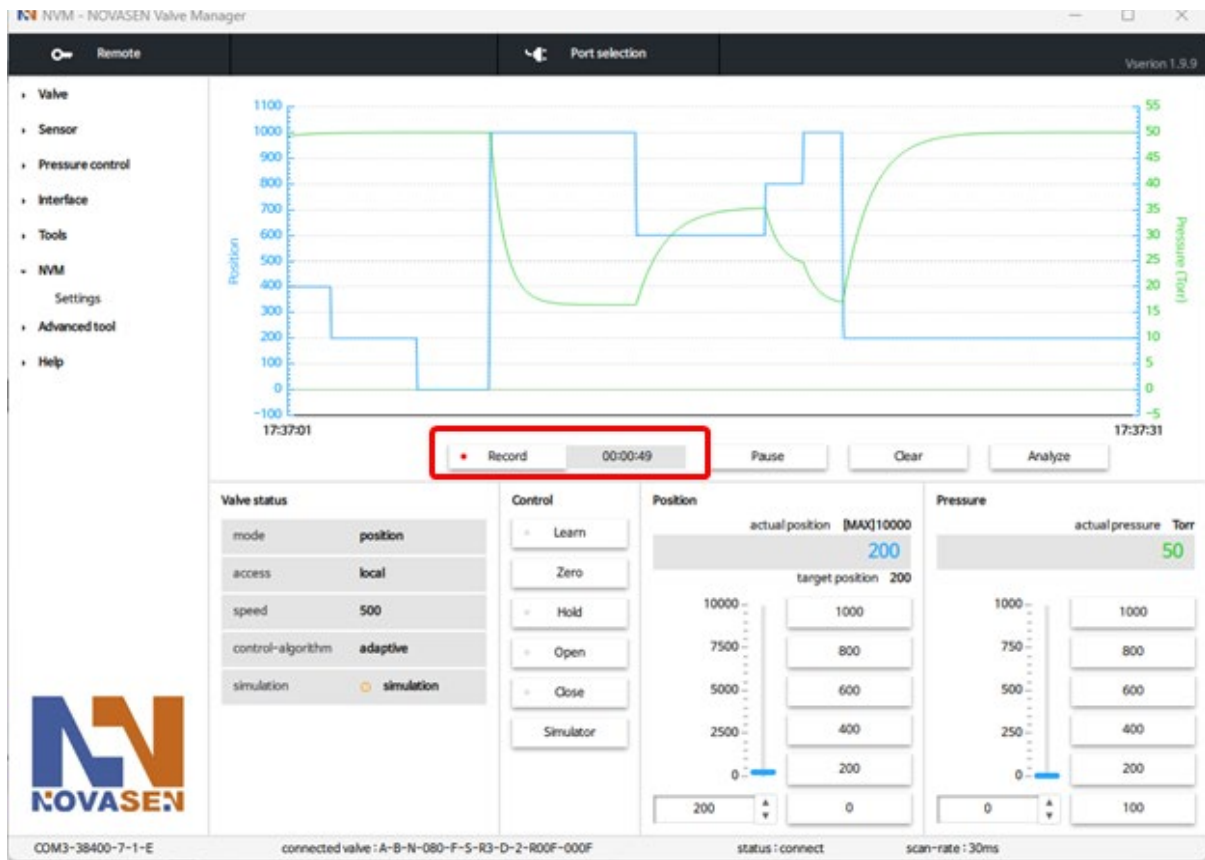
6.1 main screen configuration



Area	Description	Function
1	Top bar	REMOTE / LOCAL Port Selection Version - Release
2	Navigation	Explorer menus, adjustment and control
3	Chart	Display target position/pressure and current position/pressure
4	Valve status	Display the valve status
5	Control	Control(open/close/hold/learn/zero/simulation)
6	Position	Monitor, adjust target position
7	Pressure	Monitor, adjust target pressure
8	Status bar	Display com port, connected valve, connection status, scan-rate

6.2 Chart recorder

This function is used for record of position and pressure in time.



6.3 Status bar

Connected (NVM is connected to valve, communication is OK and operation possible)



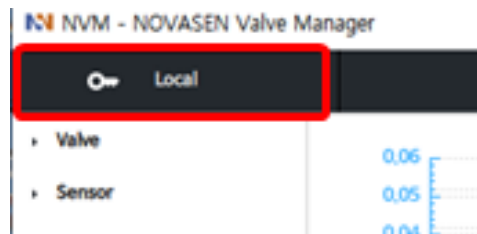
Disconnected (NVM is not connected to valve, no communication and no operation possible)



6.4 Use LOCAL MODE

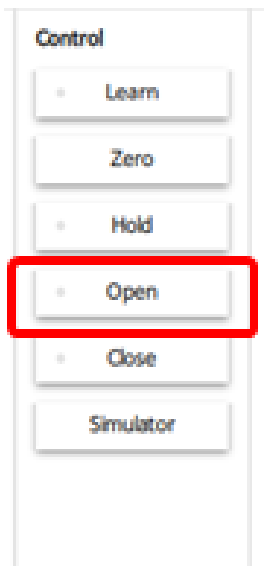
Using the 'NVM' is only possible, when the valve is the 'Local Mode'.

- Click button [Local]



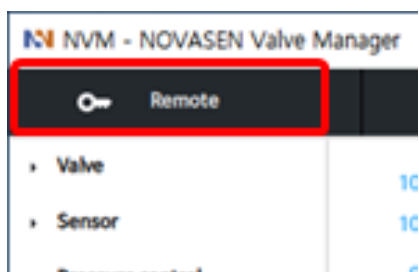
Now the valve can be operated easily via 'NVM'.

First steps should be [Open], [Close] etc.



Note: If Local operation is finished, please switch back to 'Remote mode'

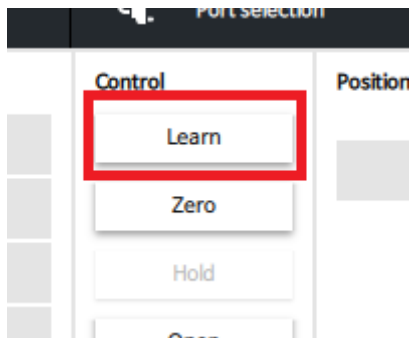
- Click button [Remote]



6.5 Learn

6.5.1 Execute learn

- Click button [Learn]



Enter the maximum pressure at which to Learn, and Click Learn

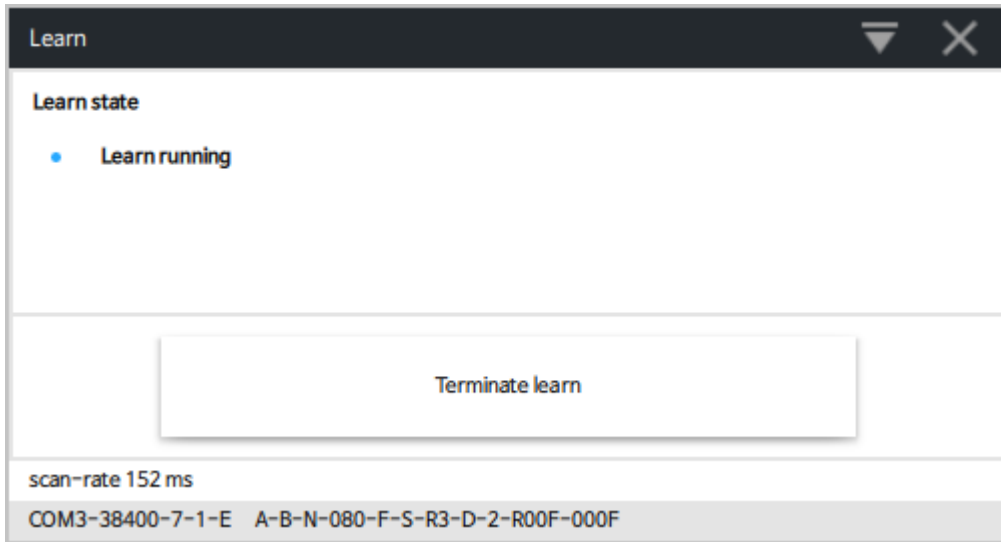


Note: Set the MFC or Flow to same as the actual process conditions.

6.5.2 Learn status

While learn is running, the actual learn status is indicated in an additional window

- Click [Terminate Learn] button to cancel learn.
- Click [X] to close the learn-status window.



The following error conditions may appear during the learn procedure:

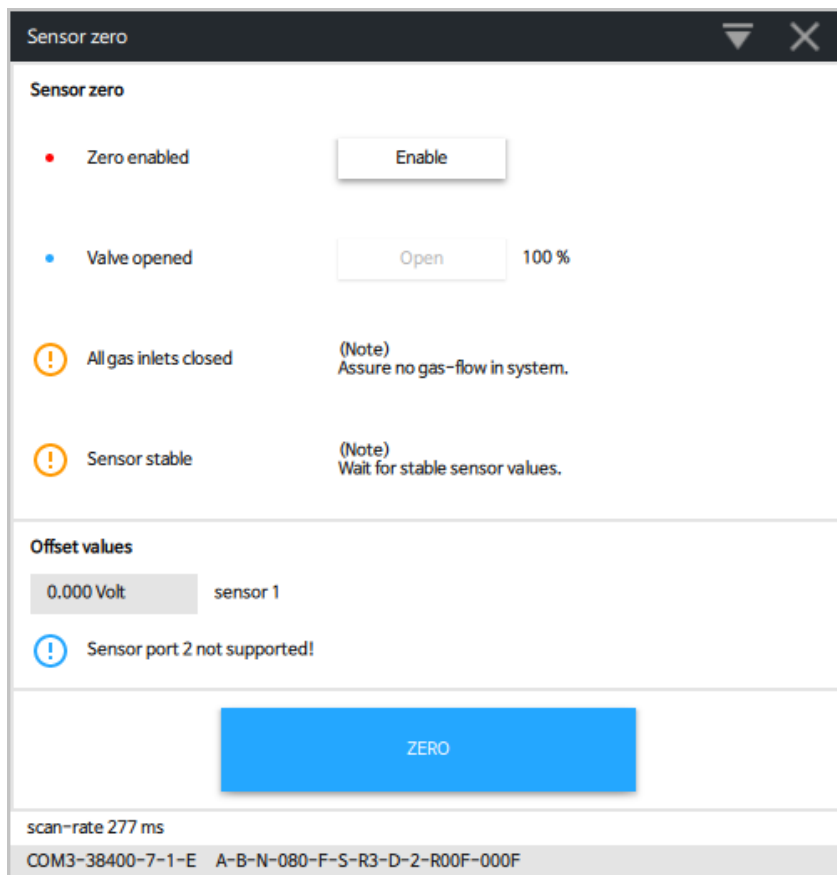
Error condition	Function
Failed by user	Control command was sent during learn procedure was running (e.g. OPEN, CLOSE, POSITION / PRESSURE command or Clicked "Terminate learn" button)
Failed by unit	Internal fault interrupting the learn procedure

6.6 Zero

Sensor Zero is a convenience function to calibrate the sensor at base pressure (no adjustment at sensor necessary). When Zero is performed the actual pressure value is set to zero. In case of 2 sensors both are calibrated (zero) at the same time.


Condition for successful ZERO:

- Base pressure is reached (min. 10000 times below SFS)
- Enable Zero
- Valve is open
- No gas flow in system
- Sensor is on operating temperature
- Sensor stable, no shifting



6.7 Fatal error

This window comes up if the valve ran into in an error condition. The basic error information is shown in the upper part of the window.



The screenshot shows a window titled "Valve recovery" with a dark header bar containing a downward arrow and a close button. The main content is divided into three sections: "Fatal error information", "Correction information", and a "Recovery" button. At the bottom, there is a status bar with technical details.

Fatal error information	
fatal error code	E 22
basic description	rotation angle of valve plate limited during operation
mode of occurrence	normal operation
potential failure cause	valve mechanics, heavy contaminated
possible error recovery	check valve mechanics and orifice

Correction information	
error 01	position : 633 / 10000
error 02	position : 620 / 10000
error 03	not support

[Recovery](#)

scan-rate 498 ms
COM3-38400-7-1-E A-B-N-080-F-S-R3-D-2-R00F-000F

6.8 Setpoint Position and Pressure

These functions are used to set the position or pressure set-points.

The screenshot displays two control panels side-by-side. The left panel is titled "Position" and shows "actual position [MAX]1000" as 200.0 and "target position" as 200.0. It features a vertical scale from 0 to 1000 with tick marks at 0, 250, 500, 750, and 1000. To the right of the scale are six buttons labeled 1000, 800, 600, 400, 200, and 0. A red arrow points to the 600 button, and a yellow callout box with the text "right mouse click to edit" is positioned over it. Below the scale is a small input field containing "200" with up and down arrow buttons. The right panel is titled "Pressure" and shows "actual pressure Torr" as -1.695. It features a vertical scale from 0.000 to 50.000 with tick marks every 10.000. To the right of the scale are six buttons labeled 50.000, 40.000, 30.000, 20.000, 10.000, and 5.000. Below the scale is a small input field containing "0" with up and down arrow buttons.

The "Set-Points Adjustment" dialog box is shown with a title bar containing a dropdown arrow and a close button. It is divided into two columns: "Position set-points" and "Pressure set-points". Each column contains six rows, each with a numeric input field and a label "set-point 1" through "set-point 6". The Position set-points are 1000, 800, 600, 400, 200, and 0. The Pressure set-points are 1000, 800, 600, 400, 200, and 100. Below the input fields, the text "max position : 10000" is displayed in blue, and "max pressure : 1,000 [Torr]" is displayed in blue. A large blue "Apply" button is centered at the bottom of the dialog. At the very bottom, the status "ready" is shown, followed by the identifier "COM3-38400-7-1-E A-B-N-080-F-S-R3-D-2-R00F-000F".

7 Valve menu

7.1 Identification

This window shows the configuration of the connected valve.



The screenshot shows a window titled "Valve identification" with a dark header bar containing a dropdown arrow and a close button. The main content area is divided into sections: "General" and "Firmware". The "General" section lists various valve parameters and their values. The "Firmware" section lists the firmware version. At the bottom of the main content area, there is a prominent blue "Edit" button. A status bar at the very bottom of the window shows "Ready" and the full product identification code.

General	
serial number	A-B-N-080-F-S-R3-D-2-R00F-000F
valve model	A : APC
valve type	B : Butterfly
sealing type	N : Non-Sealing
flange size	080 : DN80
method of contract	ISO : F
body material	S : SUS
communication interface	R3 : RS-232 with analog outputs
power option	D : with SPS and PFO
quantity of sensors	2 : 2 Sensor
version	R00F
product number	000F

Firmware	
firmware version	2211290220

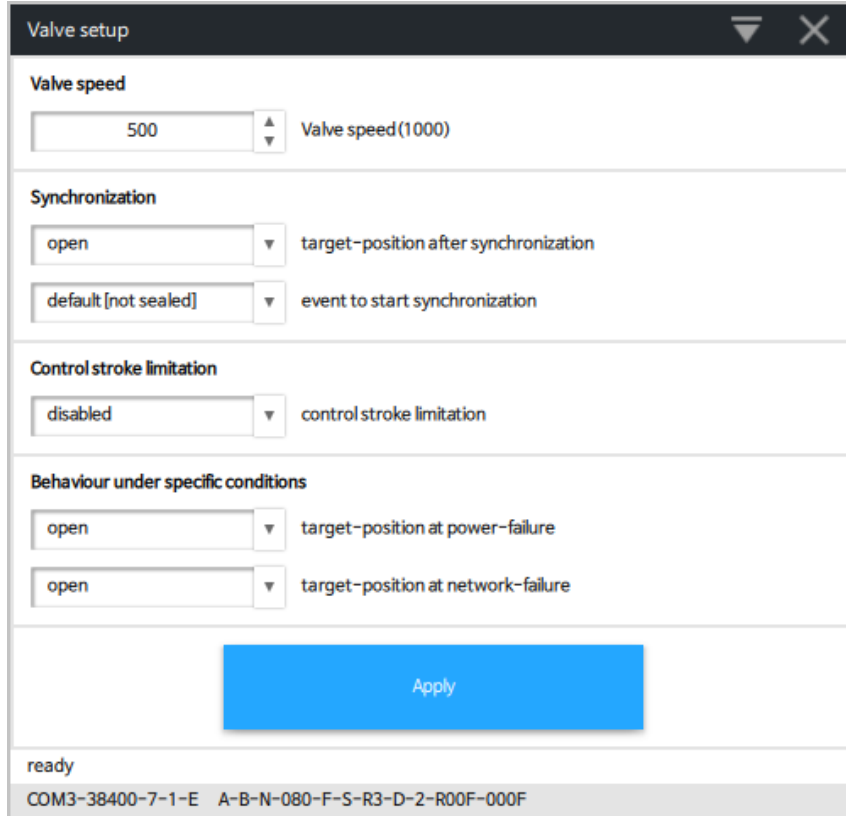
[Edit](#)

Ready
COM3-38400-7-1-E A-B-N-080-F-S-R3-D-2-R00F-000F

Notice : Edit properties may only be carried out by the NOVASEN service staff.

7.2 Setup

Basic configurations of valve must be adapted according to application needs. It is possible to change the settings.



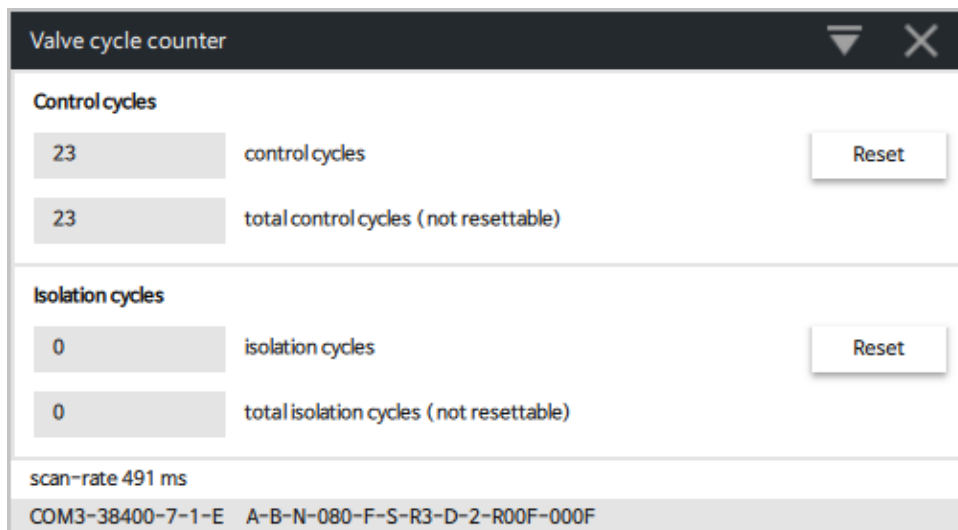
The 'Valve setup' window contains the following configuration options:

- Valve speed:** A numeric input field set to 500, labeled 'Valve speed (1000)'.
- Synchronization:** Two dropdown menus. The first is set to 'open' and labeled 'target-position after synchronization'. The second is set to 'default [not sealed]' and labeled 'event to start synchronization'.
- Control stroke limitation:** A dropdown menu set to 'disabled', labeled 'control stroke limitation'.
- Behaviour under specific conditions:** Two dropdown menus, both set to 'open'. The first is labeled 'target-position at power-failure' and the second is labeled 'target-position at network-failure'.

A blue 'Apply' button is located at the bottom center of the configuration area. Below the button, the status 'ready' is displayed. At the very bottom, the device ID 'COM3-38400-7-1-E A-B-N-080-F-S-R3-D-2-R00F-000F' is shown.

7.3 Cycle counter

This window shows the control cycles and the isolation cycles of connected valve. Reset of 'control cycles' and 'isolation cycles' are possible.



The 'Valve cycle counter' window displays the following data:

- Control cycles:** A display showing '23' control cycles and '23' total control cycles (not resettable). A 'Reset' button is located to the right of these values.
- Isolation cycles:** A display showing '0' isolation cycles and '0' total isolation cycles (not resettable). A 'Reset' button is located to the right of these values.

At the bottom of the window, the scan-rate is '491 ms' and the device ID 'COM3-38400-7-1-E A-B-N-080-F-S-R3-D-2-R00F-000F' is displayed.

7.3 Parameters

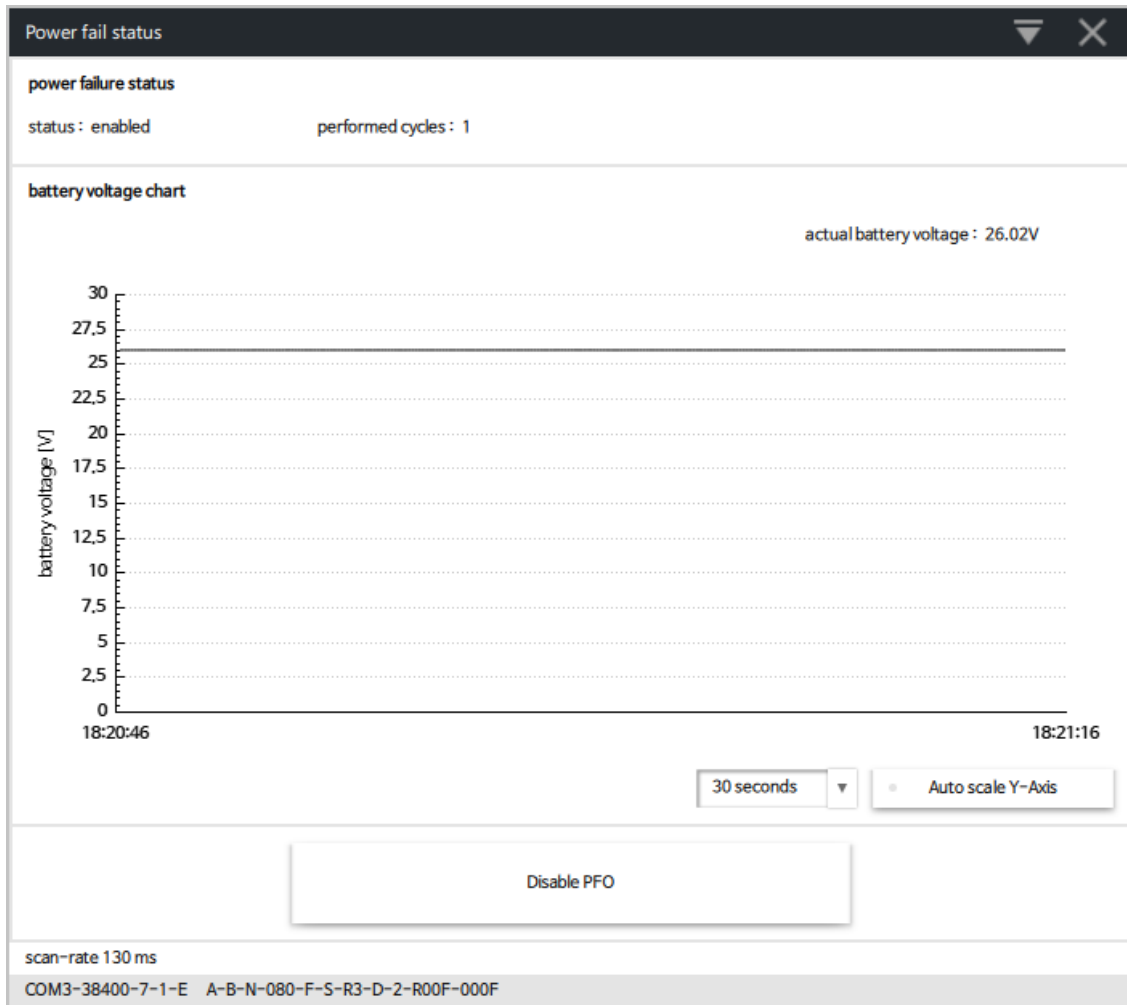
Notice : Update valve parameters may only be carried out by the NOVASEN service staff.

Valve parameters		▼	✕
00	Model(1)	1	▲▼
01	Valve type(1~2)	1	▲▼
02	Sealing type(1~3)	1	▲▼
03	Flange size(1~9)	4	▲▼
04	Contract method(1~2)	2	▲▼
05	Body material(1~2)	2	▲▼
06	Interface(1~9)	2	▲▼
07	Power option(1~6)	4	▲▼
08	Sensor num(1~2)	2	▲▼
09	Version1(0~Z)	0	▲▼
10	Version2(0~Z)	0	▲▼
<div style="display: flex; justify-content: space-around;">Read from controllerRead from fileWrite to fileWrite to controllerParameter resetFactory reset</div>			
ready			
COM3-38400-7-1-E A-B-N-080-F-S-R3-D-2-R00F-000F			

7.4 Power Fail Status

PFO = Power Failure Options

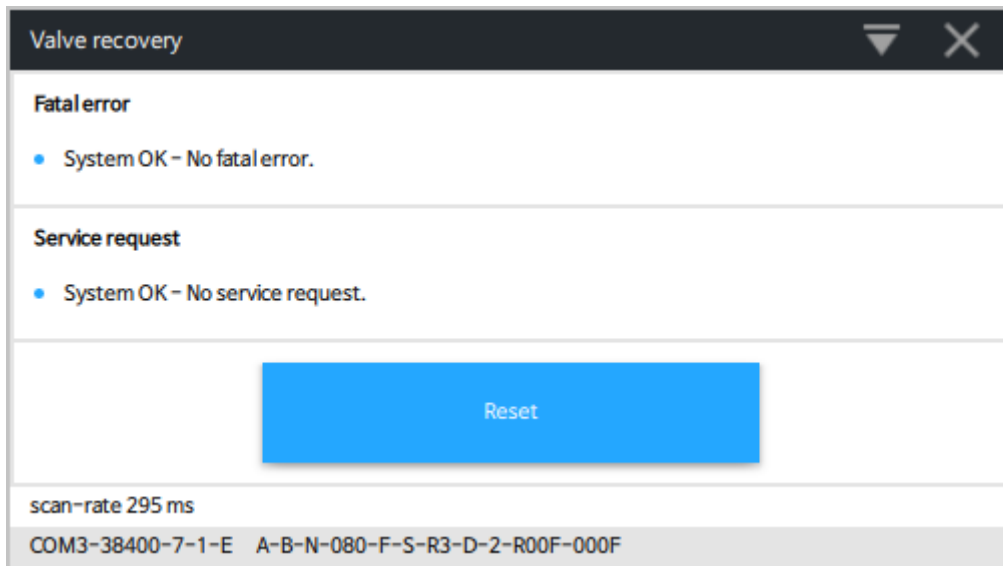
This window shows the status of PFO. This function is only available if PFO is installed. It is possible to disable PFO temporary. Click [Disable PFO]



- PFO is always enabled after power up!
- For "Safety", disable PFO always before maintenance!

7.5 Recovery

With this function it is possible to [Reset] Fatal Error and 'Service Request'.



If Fatal Error appear:

The valve is heavily contaminated or gate seal is heavily sticking and valve cleaning is necessary.
Condition of fatal error = loss of more than 5 motor steps within 1 second.

1. Do the Maintenance procedure
2. Reset the 'Fatal Error'

If Service request appear:

The contamination of valve is getting higher and valve cleaning is necessary in near future.
Condition of service request = loss of more than 5 motor steps within 1 minute.

1. Do the Maintenance procedure
2. Reset the 'Service Request'

8 Sensor menu

8.1 Setup(for old version)

A sensor (vacuum gauge) is used for pressure control only. Depending on the hardware-specification **NOVASEN** valve controllers can support 1 or 2 sensors. In general sensors with a linear output-voltage range of 0 to10V are supported. A maximum sensor ratio of 100 is supported (2 sensor version).

Use the Sensor-Setup window to enter the sensor specifications of the connected sensor(s). For other sensor types please contact **NOVASEN**.

The screenshot shows a 'Sensor setup' window with the following fields:

- Sensor port 1:**
 - selection: select
 - unit: Torr
 - full scale: 1000
- sensor port 2:**
 - selection: not selected
 - unit: Torr
 - full scale: 1

At the bottom, there is a blue 'Apply' button and a status bar showing 'Ready' and the device ID 'COM3-38400-7-1-E A-B-N-080-F-S-R3-D-2-R00F-000F'.

Settings

Item	Function
selection	'Selected' enable pressure control using the sensor connected to the appropriate sensor port 1 or 2. 'Not selected' to exclude this sensor from pressure control. The actual sensor value is still measured by the valve controller but is not used for pressure control.
unit	Select the pressure unit of the connected sensor according to the sensor specifications.
Full scale	Enter the full-range value of the connected sensor according to the sensor specifications. Data of sensor full scale (SFS)

8.2 Setup(for new version)

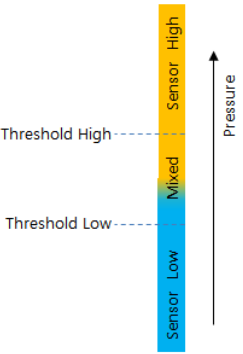
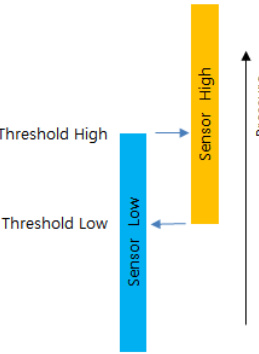
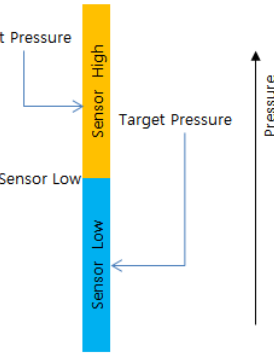
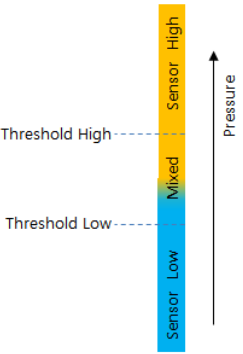
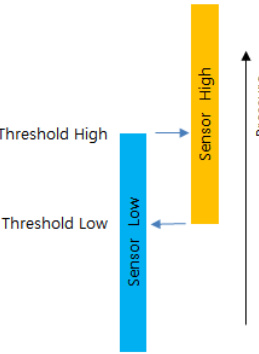
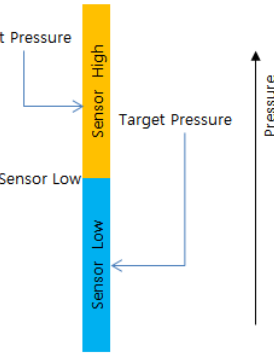
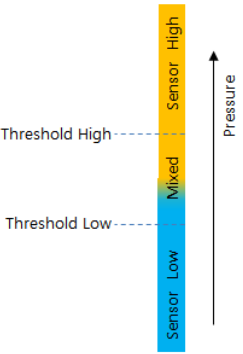
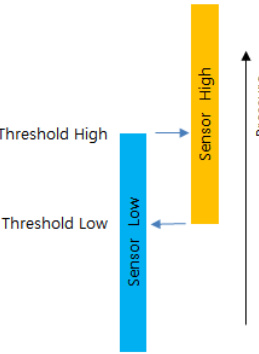
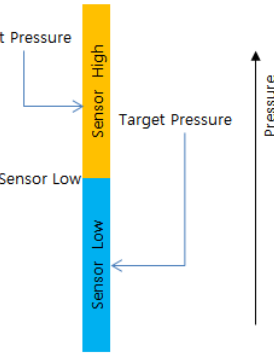
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Use the Sensor-Setup window to enter the sensor specifications of the connected sensor(s). For other sensor types please contact **NOVASEN**.

The screenshot shows the 'Sensor setup' window with two columns for 'Sensor port 1' and 'Sensor port 2'. Both ports have 'analog active' checked. Sensor port 1 is set to 'analog' source, 'selected' selection, 'Torr' range, and '1000.0000' full scale. Sensor port 2 is set to 'digital' source, 'selected' selection, 'Torr' range, and '10.0000' full scale. Both ports have 'enabled' zero adjust, '0.00' offset value, '-14.00' offset min, and '14.00' offset max. Both have '0.000' scale offset and '1.000000' scale. Both have '0.01' filter time and 'no' logarithmic sensor. A crossover section is at the bottom with 'soft switch' mod, '0.00' delay, '90.0000' low [% SFS Low Sensor], and '100.0000' high [% SFS Low Sensor]. An 'Apply' button is at the bottom center. The status bar shows 'ready' and the hardware ID 'COM3-38400-7-1-E A-B-N-080-F-S-R3-D-2-R00F-000F'.

Item	Function
source	<p>none -> if no analog or digital reading happens</p> <p>analog -> sensor is connected to the valve, read the analog voltage of the sensor</p> <p>digital -> sensor is not connected to the valve, valve receive the valve from the field bus(EtherCAT, Profibus or CCLink)</p>
selection	<p>"selected" enable pressure control using the sensor connected to the appropriate sensor port 1 or 2.</p> <p>"not selected" to exclude the sensor from pressure control.</p> <p>The actual sensor valve is still measured by the valve controller but is not used for pressure control.</p>

unit	Select the pressure unit of the connected sensor according to the sensor specifications.
full-range	Enter the full-range value of the connected sensor according to the sensor specifications. Data of sensor full scale (SFS)
digital value	Actual value of the digital input. (Or it is possible to set the value for test purpose)
zero adjust	The feature is used to set the actual pressure value of a vacuum system to zero. Select enable or disable to activate or deactivate the feature. Please refer to <<6.6 Zero>> for further details.
offset value	Shows resulting value after a zero adjust or can be used to set the value.
offset limit min	Depending on the voltage range of the sensor the offset limit can be adjusted. e.g. range of Sensor -0.2..10.5V --> offset limit min = -0.2, offset limit max = 0.5V
offset limit max	
scale offset	Linear sensors with other voltage range as 0..10V has to be scaled: Sensor 0.5V --> scale factor = 2, scale offset = 0; Sensor 1..9V --> scale factor = 1.25, scale offset = 1.0 V Sensor -10..10V --> scale factor = 0.5, scale offset = -10.0 -10V Zero adjust must take place at the calculation point where the value should be 0, therefore zeroing must happens before or after scaling.In above example for sensor 1..9V it is after scale, for all others it is before scale.
scale factor	
zero point	
filter time	Reduces noise of the sensor signal Note: For pressure control it is not good to have delayed sensor signal, so be carefully with filtering of the sensor signal.

linearize log signal	<p>If a logarithmic sensor is used, then there are 2 possibilities:</p> <ol style="list-style-type: none"> Pressure control with the logarithmic signal <ul style="list-style-type: none"> - no linearization on the valve (Linearization 'off' in 'Sensor - Setup') - linearization in the NVM (Linearization 'on' in NVM - Settings') - use of PI pressure control algorithm (adaptive algorithm cannot be used because it needs a linear signal) - advantage: whole range of sensor can be used 									
voltage per decade	<ol style="list-style-type: none"> Pressure control with a linearized signal <ul style="list-style-type: none"> - linearization on the valve (Linearization 'on' in 'Sensor - Setup') - no linearization in the NVM (Linearization 'off' in NVM - Settings') - can use adaptive or PI pressure control algorithm - disadvantage: only about 4 decades of the sensor range can be used for pressure control 									
voltage at full scale	<p>voltage per decade: normally can be found in the manual of the sensor.</p> <p>voltage at full scale: highest voltage point of the logarithmic sensor for pressure control</p>									
crossove r mode	<ul style="list-style-type: none"> When two sensor are used for pressure control the crossover handles the two pressure signals to building one system pressure(Actual pressure) 									
crossove r low	<table border="1" data-bbox="357 1205 1406 1899"> <thead> <tr> <th data-bbox="357 1205 708 1234">Soft switch</th> <th data-bbox="708 1205 1059 1234">Hard switch</th> <th data-bbox="1059 1205 1406 1234">Target pressure</th> </tr> </thead> <tbody> <tr> <td data-bbox="357 1234 708 1630"> <p>Smooth transition between sensors</p>  </td> <td data-bbox="708 1234 1059 1630"> <p>Abrupt switcher between sensors</p>  </td> <td data-bbox="1059 1234 1406 1630">  </td> </tr> <tr> <td data-bbox="357 1630 708 1899"> <p>Within the threshold levels, the resulting measurement value is a summation of the two sensors signals with a proportional ratio of the two measured values.</p> <p>When to use This is the standard mode. Values of both sensors need to fit together in the crossover area. otherwise crossover effect result. (nonlinearity). Therefore, sensor ratio should not be too height(about <= 100).</p> </td> <td data-bbox="708 1630 1059 1899"> <p>Switching between sensors according to the hysteresis threshold levels and an optional delay.</p> <p>When to use Preferred setting if the sensor signals don't fit together in the crossover area (for example if sensor ratio is high)</p> </td> <td data-bbox="1059 1630 1406 1899"></td> </tr> </tbody> </table>	Soft switch	Hard switch	Target pressure	<p>Smooth transition between sensors</p> 	<p>Abrupt switcher between sensors</p> 		<p>Within the threshold levels, the resulting measurement value is a summation of the two sensors signals with a proportional ratio of the two measured values.</p> <p>When to use This is the standard mode. Values of both sensors need to fit together in the crossover area. otherwise crossover effect result. (nonlinearity). Therefore, sensor ratio should not be too height(about <= 100).</p>	<p>Switching between sensors according to the hysteresis threshold levels and an optional delay.</p> <p>When to use Preferred setting if the sensor signals don't fit together in the crossover area (for example if sensor ratio is high)</p>	
Soft switch	Hard switch	Target pressure								
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crossove r high										
crossove r delay	<p>crossover delay : wait time after crossover trigger happens (only for 'Hard Switch')</p>									

8.3 Sensor analysis

The Sensor analysis screen shows the actual data of connected sensor(s).

The screenshot displays the 'Sensor analysis' software interface. It is divided into several sections:

- general sensor status:** Shows 'sensor full scale [Torr]' set to 1000, 'zero adjust' as 'disabled', 'sensor factor' as 1.668, and 'resulting pressure [Torr]'.
- sensor port 1:** Shows 'selected' as 'selected', 'full scale [Torr]' as 1000, 'processing' as 100 (highlighted in blue), 'measured value [Torr]' as 1.668, 'offset [Torr]' as 0, and 'value (offset considered) [Torr]' as 1.668.
- sensor port 2:** Shows 'not selected' as 'not selected', 'full scale [Torr]' as 10, 'processing' as 0, 'measured value [Torr]' as 5.00824, 'offset [Torr]' as 0, and 'value (offset considered) [Torr]' as 5.00824.
- graph settings:** Includes dropdowns for 'unit' (Torr), 'time interval' (30 seconds), and 'scale' (auto).
- sensor chart:** A line graph with a y-axis labeled 'Sensor 1' ranging from -4 to 8 and an x-axis showing time from 19:24:04 to 19:24:34. The data points are clustered around a value of 2.
- scan:** A footer bar containing the identifier 'COM3-38400-7-1-E A-B-N-080-F-S-R4-D-2-R00F-000F'.

9 Pressure control menu

9.1 setup

Select the Pressure Control - Setup configuration according to requirement of application. Refer for details to chapter: «4.7 Tuning of pressure control (adaptive) » in the valve manual for function and adjustment procedure.

Pressure control setup

adaptive downstream

active

0.2000 gain factor(0.0001 ~ 100)

0 delta factor(0.0001 ~ 100)

0.00 sensor delay(0.00 sec ~ 1.00 sec)

0.00 ramp time(0.00 sec ~ 9.99 sec)

constant time ramp mode

fixed 1

active

0.0010 P-gain(0.0001 ~ 100.0000)

0.0010 I-gain(0.0000 ~ 100.0000)

0.00 ramp time(0.00 sec ~ 9.99 sec)

constant time ramp mode

downstream control direction

fixed 2

active

0.0010 P-gain(0.0001 ~ 100.0000)

0.0010 I-gain(0.0000 ~ 100.0000)

0.00 ramp time(0.00 sec ~ 9.99 secs)

constant time ramp mode

downstream control direction

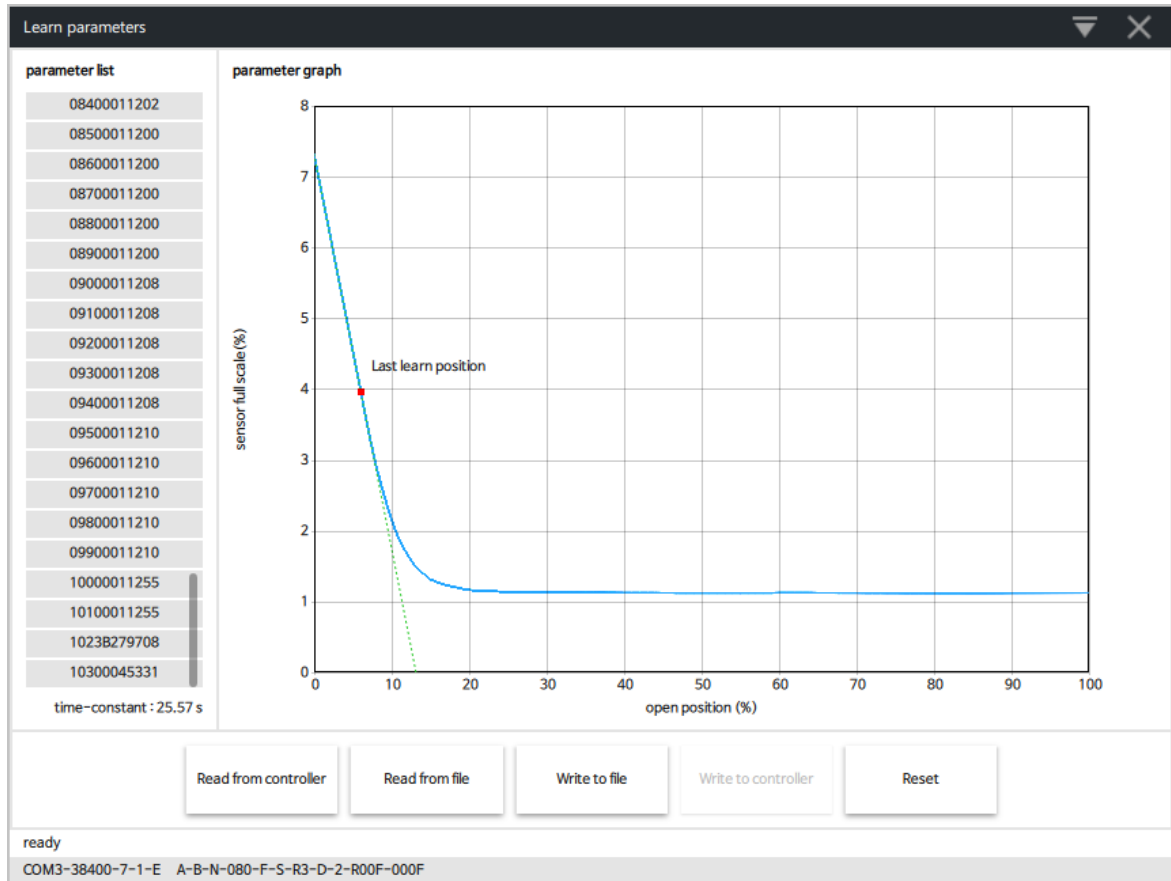
Apply

ready

COM3-38400-7-1-E A-B-N-080-F-S-R3-D-2-R00F-000F

9.2 Learn parameters

With this function it is possible to «Load», «Write», «Read» or «Save» the 'Learn Parameters'.

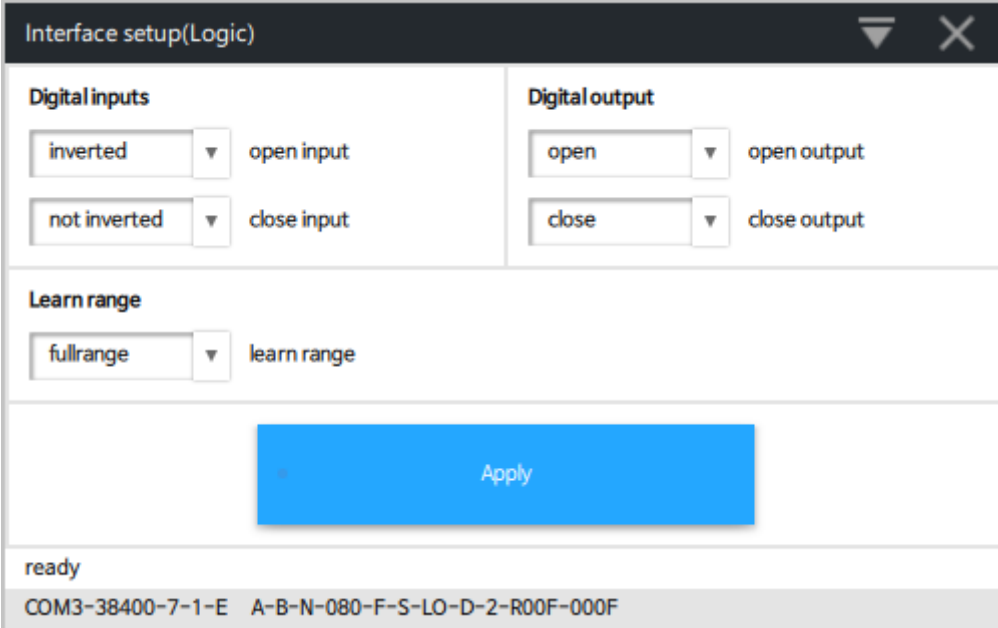


10 Interface(Logic)

10.1 setup

For setting the Logic interface configuration, select each parameter according to your host computer.

Refer to chapter: «Digital inputs» and «Digital outputs» in the valve manual for details.



The screenshot shows a software window titled "Interface setup(Logic)". The window is divided into several sections:

- Digital inputs:** Contains two dropdown menus. The first is set to "inverted" and is labeled "open input". The second is set to "not inverted" and is labeled "close input".
- Digital output:** Contains two dropdown menus. The first is set to "open" and is labeled "open output". The second is set to "close" and is labeled "close output".
- Learn range:** Contains one dropdown menu set to "fullrange" and labeled "learn range".

Below these sections is a large blue button labeled "Apply". At the bottom of the window, the status "ready" is displayed, followed by the device ID "COM3-38400-7-1-E A-B-N-080-F-S-LO-D-2-R00F-000F".

10.2 status

This window shows the Status (digital input / digital output / analog input) of connected valve with Logic interface.

Interface status(Logic)
▼ ✕

Digital inputs

digital input	configuration	connector-pin	status
<input checked="" type="checkbox"/> open	inverted	17	ON
<input type="checkbox"/> close	not inverted	15	OFF
<input type="checkbox"/> control mode	-	7	OFF
<input checked="" type="checkbox"/> learn	fullrange	19	ON
<input type="checkbox"/> zero	-	3	OFF
<input type="checkbox"/> locked	-	18	OFF
<input type="checkbox"/> hold	-	16	OFF
<input type="checkbox"/> set point range	-	5	OFF

input common, contact control = pin 6
input common, voltage control = pin 4

Digital outputs

digital output	configuration	connector-pin	status
<input checked="" type="checkbox"/> valve opened	open	8	ON
<input type="checkbox"/> valve closed	close	9	OFF
<input type="checkbox"/> alarm	-	22	OFF
<input checked="" type="checkbox"/> ready	-	21	ON

output common = pin 20

Analog input

5.008 volt

analog input voltage

analog ground = pin 13

scan-rate 263 ms

COM3-38400-7-1-E A-B-N-080-F-S-LO-D-2-R00F-000F

11 Interface(EtherCAT)

11.1 setup

For setting the EtherCAT interface configuration, select each parameter according to your host computer.

Interface setup(EtherCAT)

Communication parameters
Device ID : 0

PDO data

data name	data type	range(from)	range(to)
pressure	signed integer	0	1000000
pressure sensor 1	signed integer	0	1000000
pressure sensor 2	signed integer	0	1000000
position	signed integer	0	100000
target position	signed integer	0	100000
cluster valve position	signed integer	0	100000
pressure setpoint	signed integer	0	1000000

Digital inputs

interlock close function
no inverted
no disable

Digital output

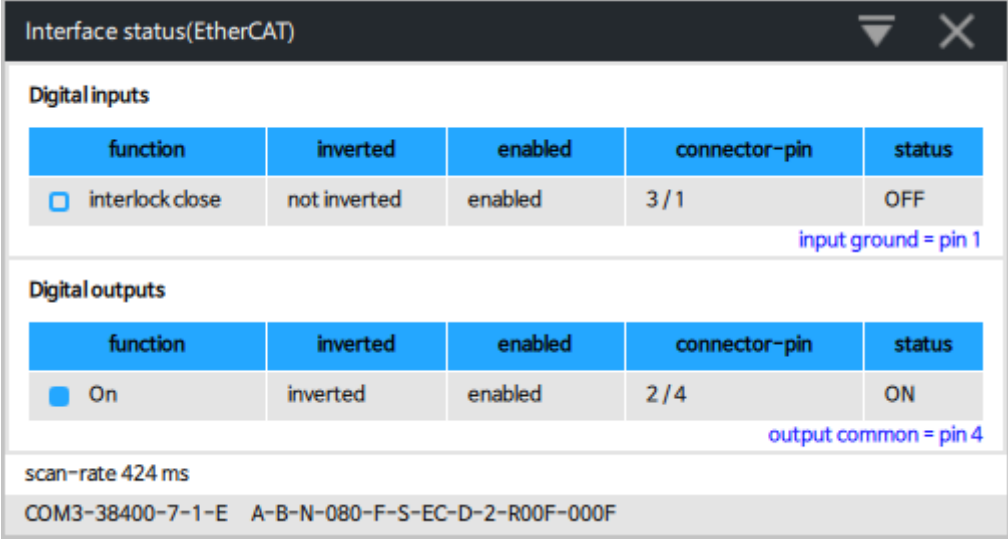
On function
yes inverted
no disable

Apply

ready
COM3-38400-7-1-E A-B-N-080-F-S-EC-D-2-R00F-000F

11.2 status

This window shows the Status (digital in/out) of connected valve with EtherCAT interface.



The screenshot shows a software window titled "Interface status(EtherCAT)". It contains two tables: "Digital inputs" and "Digital outputs".

Digital inputs

function	inverted	enabled	connector-pin	status
<input type="checkbox"/> interlock close	not inverted	enabled	3 / 1	OFF

input ground = pin 1

Digital outputs

function	inverted	enabled	connector-pin	status
<input checked="" type="checkbox"/> On	inverted	enabled	2 / 4	ON

output common = pin 4

scan-rate 424 ms

COM3-38400-7-1-E A-B-N-080-F-S-EC-D-2-R00F-000F

12 Interface (RS232)

12.1 setup

For setting the RS232 interface configuration, select each parameter according to your host computer.

Interface setup(RS232/RS485)

interface settings

600 ▼ baudrate

even ▼ parity

7 bit ▼ data length

1 ▼ stop bits

communication settings

0~100000 ▼ position range

1000000 ▲ ▼ pressure range

Digital input

not inverted ▼ open valve

not inverted ▼ close valve

Digital outputs

open ▼ opened valve

close ▼ closed valve

Apply

ready

COM3-38400-7-1-E A-B-N-080-F-S-R3-D-2-R00F-000F

12.2 status

This window shows the Status (digital in/out) of connected valve with RS232 interface.

Interface status(RS232/RS485) ▽ ✕

Digital inputs

digital input	configuration	enabled	connector-pin	status
<input type="checkbox"/> interlock open	not inverted	enabled	17	OFF
<input type="checkbox"/> interlock close	not inverted	enabled	15	OFF

input common, contact control = pin 23
input common, voltage control = pin 25

Digital outputs

digital output	configuration	enabled	connector-pin	status
<input checked="" type="checkbox"/> opened	-	enabled	8	ON
<input type="checkbox"/> closed	-	enabled	9	OFF

output common = pin 10

scan-rate 280 ms

COM3-38400-7-1-E A-B-N-080-F-S-R3-D-2-R00F-000F

13 Interface (RS485)

13.1 setup

For setting the RS485 interface configuration, select each parameter according to your host computer.

The screenshot shows a configuration window titled "Interface setup(RS232/RS485)". The window is organized into several sections:

- interface settings:** Contains dropdown menus for baudrate (600), parity (even), data length (7 bit), stop bits (1), operation mode (RS232), duplex mode (Full), device address (0), and termination (LF(CR/LF)).
- communication settings:** Contains dropdown menus for position range (0~100000) and pressure range (1000000).
- Digital input:** Contains dropdown menus for open valve (not inverted) and close valve (not inverted).
- Digital outputs:** Contains dropdown menus for opened valve (open) and closed valve (close).

At the bottom of the window, there is a large blue "Apply" button. Below the button, the status "ready" is displayed, followed by the device ID "COM3-38400-7-1-E A-B-N-080-F-S-R4-D-2-R00F-000F".

13.2 status

This window shows the of connected valve with RS485 interface.

Interface status(RS232/RS485) ▽ ✕

Digital inputs

digital input	configuration	enabled	connector-pin	status
<input type="checkbox"/> interlock open	not inverted	enabled	17	OFF
<input type="checkbox"/> interlock close	not inverted	enabled	15	OFF

input common, contact control = pin 23
input common, voltage control = pin 25

Digital outputs

digital output	configuration	enabled	connector-pin	status
<input type="checkbox"/> opened	-	enabled	8	OFF
<input checked="" type="checkbox"/> closed	-	enabled	9	ON

output common = pin 10

scan-rate 244 ms

COM3-38400-7-1-E A-B-N-080-F-S-R4-D-2-R00F-000F

14 Interface (DeviceNet)

14.1 setup

For setting the DeviceNet interface configuration, select each parameter according to your host computer.

Interface setup(D-Net)
▼ ×

General interface settings

▲▼ MACaddress

▼ baudrate

▼ position unit

▲▼ gain

▼ pressure unit

▲▼ gain

Input assembly data list

	index	length	object	additional information
<input checked="" type="checkbox"/>	0	1	exception status	device net exception status
<input type="checkbox"/>	-	2	pressure	pressure (data type = INT)
<input checked="" type="checkbox"/>	1	4	pressure	pressure (data type = FLOAT)
<input type="checkbox"/>	-	2	setpoint	setpoint (data type = INT)
<input type="checkbox"/>	-	4	setpoint	setpoint (data type = FLOAT)
<input type="checkbox"/>	-	2	position	position (data type = INT)
<input checked="" type="checkbox"/>	5	4	position	position (data type = FLOAT)
<input type="checkbox"/>	-	15	exception detail alarm	exception detail alarm

Digital input

▼ activation

▼ function

▼ polarity

Output assembly

	index	length	object	additional information
<input checked="" type="checkbox"/>	0	1	control mode	control mode
<input type="checkbox"/>	-	2	setpoint	setpoint (data type = INT)
<input checked="" type="checkbox"/>	1	4	setpoint	setpoint (data type = FLOAT)
<input checked="" type="checkbox"/>	5	1	setpoint type	setpoint type
<input type="checkbox"/>	-	1	learn	learn
<input type="checkbox"/>	-	2	learn pressure limit	learn pressure limit (data type ...
<input type="checkbox"/>	-	4	learn pressure limit	learn pressure limit (data type ...
<input type="checkbox"/>	-	1	zero	zero

Apply

export assembly settings to EDS file

ready

COM3-38400-7-1-E A-B-N-080-F-S-DN-D-2-R00F-000F

14.2 status

This window shows the of connected valve with DeviceNet interface.

Interface status(D-Net)
▼ ×

<p>Device status</p> <div style="background-color: #ccc; padding: 2px; margin-bottom: 5px;">OPEN</div> <p>exception status</p> <ul style="list-style-type: none"> <input type="checkbox"/> ALARM/device-common <input type="checkbox"/> ALARM/device-specific <input type="checkbox"/> ALARM/manufacturer-specific <input type="checkbox"/> undefined <input type="checkbox"/> WARNING/device-common <input type="checkbox"/> WARNING/device-specific <input type="checkbox"/> WARNING/manufacturer-specific <input checked="" type="checkbox"/> expanded mode 	<p>General interface settings</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>MACaddress</td><td>255</td></tr> <tr><td>baudrate</td><td>auto</td></tr> <tr><td>firmware</td><td>2211290220</td></tr> <tr><td>serial number</td><td>3612</td></tr> <tr><td>position unit</td><td>counts</td></tr> <tr><td>position gain</td><td>1.000</td></tr> <tr><td>pressure unit</td><td>counts</td></tr> <tr><td>sensor 1 gain</td><td>1.000</td></tr> <tr><td>sensor 2 gain</td><td>1.000</td></tr> </table>	MACaddress	255	baudrate	auto	firmware	2211290220	serial number	3612	position unit	counts	position gain	1.000	pressure unit	counts	sensor 1 gain	1.000	sensor 2 gain	1.000	<p>Input assembly</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #007bff; color: white;"><th>index</th><th>length</th><th>object</th></tr> </thead> <tbody> <tr><td>0</td><td>1</td><td>exception status</td></tr> <tr><td>1</td><td>4</td><td>pressure</td></tr> <tr><td>5</td><td>4</td><td>position</td></tr> <tr><td>9</td><td>1</td><td>valve close/open check</td></tr> </tbody> </table> <p>Output assembly</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #007bff; color: white;"><th>index</th><th>length</th><th>object</th></tr> </thead> <tbody> <tr><td>0</td><td>1</td><td>control mode</td></tr> <tr><td>1</td><td>4</td><td>setpoint</td></tr> <tr><td>5</td><td>1</td><td>setpoint type</td></tr> </tbody> </table>	index	length	object	0	1	exception status	1	4	pressure	5	4	position	9	1	valve close/open check	index	length	object	0	1	control mode	1	4	setpoint	5	1	setpoint type
MACaddress	255																																														
baudrate	auto																																														
firmware	2211290220																																														
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position unit	counts																																														
position gain	1.000																																														
pressure unit	counts																																														
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1	4	pressure																																													
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9	1	valve close/open check																																													
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1	4	setpoint																																													
5	1	setpoint type																																													

<p>Digital inputs</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #007bff; color: white;"><th>function</th><th>polarity</th><th>enabled</th><th>connector-pin</th><th>status</th></tr> </thead> <tbody> <tr><td><input type="checkbox"/> interlock close</td><td>not inverted</td><td>enabled</td><td>-</td><td>OFF</td></tr> </tbody> </table>	function	polarity	enabled	connector-pin	status	<input type="checkbox"/> interlock close	not inverted	enabled	-	OFF	<p>Digital outputs</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #007bff; color: white;"><th>function</th><th>polarity</th><th>enabled</th><th>connector-pin</th><th>status</th></tr> </thead> <tbody> <tr><td><input checked="" type="checkbox"/> constantly ON</td><td>inverted</td><td>enabled</td><td>-</td><td>ON</td></tr> </tbody> </table>	function	polarity	enabled	connector-pin	status	<input checked="" type="checkbox"/> constantly ON	inverted	enabled	-	ON
function	polarity	enabled	connector-pin	status																	
<input type="checkbox"/> interlock close	not inverted	enabled	-	OFF																	
function	polarity	enabled	connector-pin	status																	
<input checked="" type="checkbox"/> constantly ON	inverted	enabled	-	ON																	

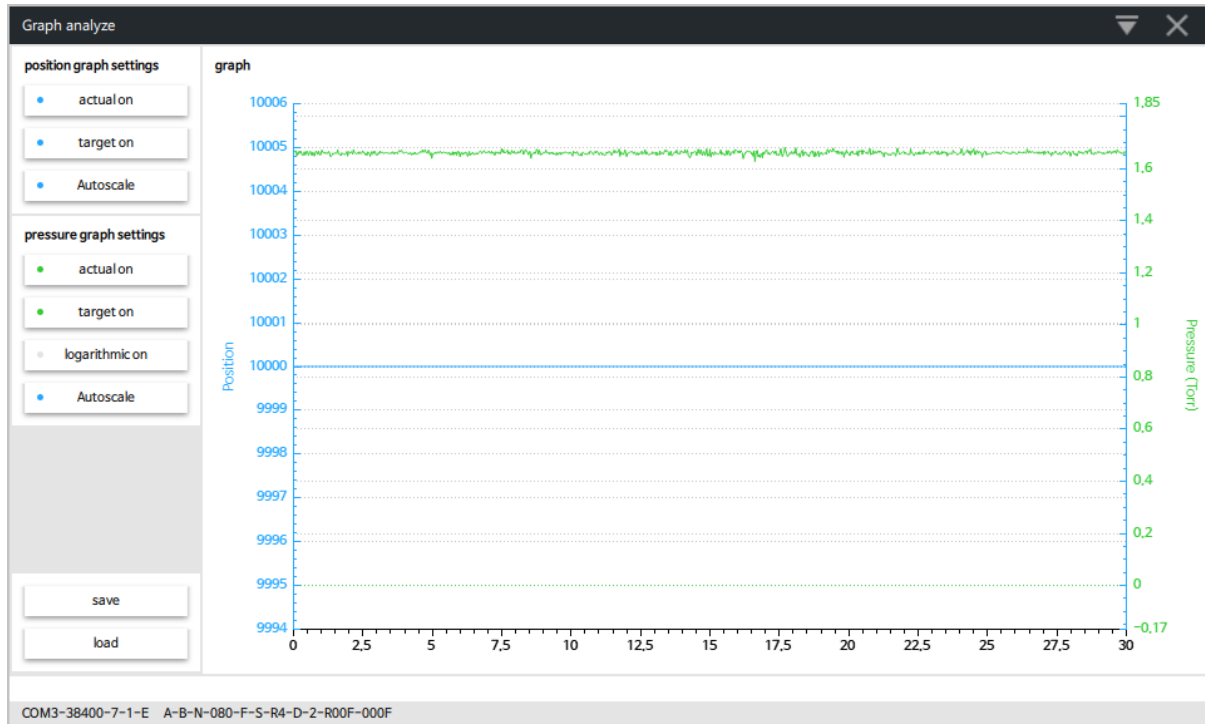
scan-rate 523 ms

COM3-38400-7-1-E A-B-N-080-F-S-DN-D-2-R00F-000F

15 Tool

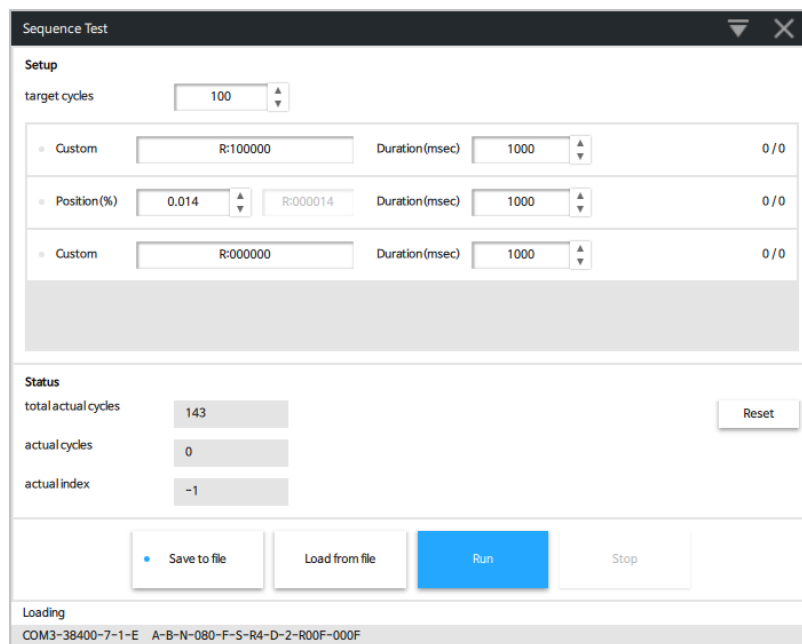
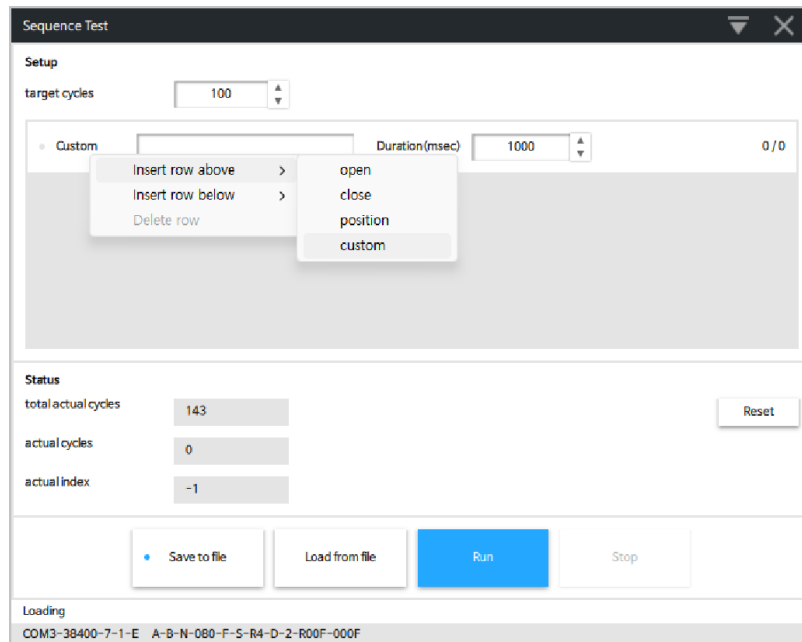
15.1 Graph analyze

A chart that was recorded by the graph in the main screen can be displayed.



15.2 Sequencer

Creating a command sequence.

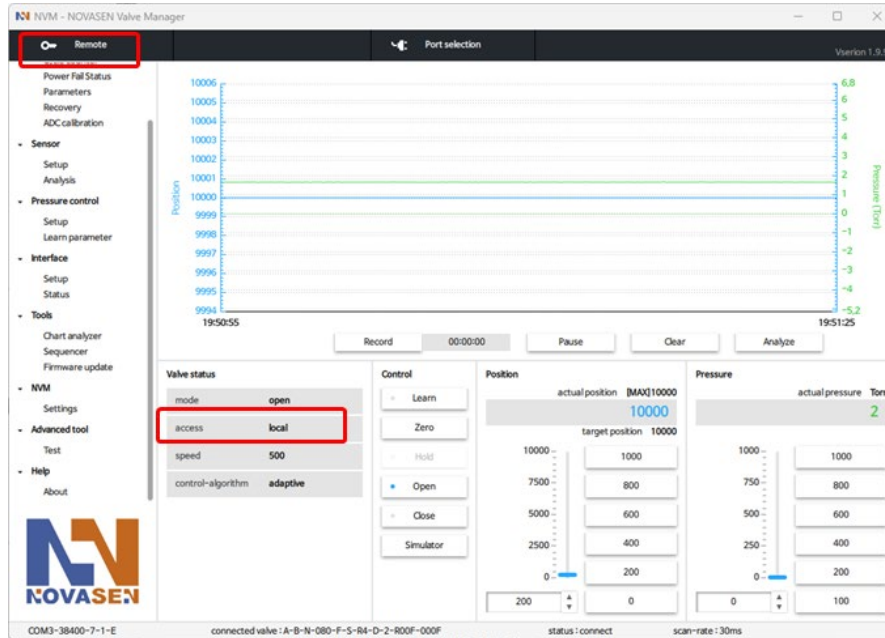


- Choose command or type command
- Input target cycles
- Click [Run] to start the sequence. Click [Stop] to stop the sequence

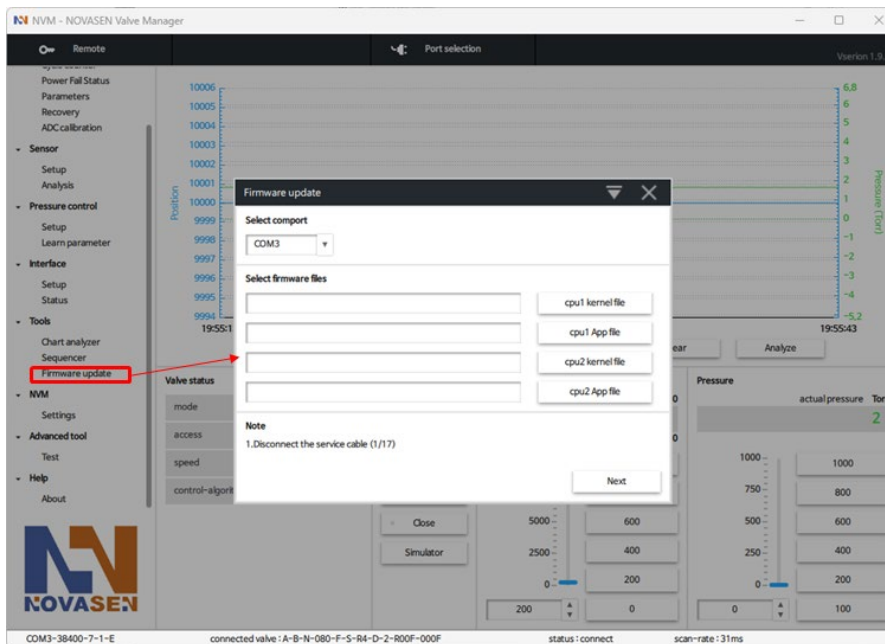
15.3 Firmware update

'Firmware update' is used for update firmware to valve controller.

1. Change access mode to 'LOCAL'



2. Click [Tools->Firmware update]



3. Disconnect the service cable. Click "Next"

Firmware update

Select comport

Select firmware files

3.Source/x.output/release/firmware/kerneL_cpu01.txt cpu1 kernel file

cpu1 App file

3.Source/x.output/release/firmware/kerneL_cpu02.txt cpu2 kernel file

cpu2 App file

Note

1.Disconnect the service cable (1/17)

Next

4. Connect the download adapter to the service port. Click "Next"

Firmware update

Select comport

Select firmware files

3.Source/x.output/release/firmware/kerneL_cpu01.txt cpu1 kernel file

cpu1 App file

3.Source/x.output/release/firmware/kerneL_cpu02.txt cpu2 kernel file

cpu2 App file

Note

2.Connect the download adapter to the service port (2/17)

Next

5. Connect the service cable to the download adapter. Click "Next"

Firmware update

Select comport

Select firmware files

3.Source/x.output/release/firmware/kerneL_cpu01.txt cpu1 kernel file

cpu1 App file

3.Source/x.output/release/firmware/kerneL_cpu02.txt cpu2 kernel file

cpu2 App file

Note

3.Connect the service cable to the download adapter (3/17)

Next

6. If the valve is powered on, power cycle it. If not, turn it on. Click "Next"

Firmware update

Select com port

Select firmware files

3.Source/x.output/release/firmware/kerneL_cpu01.txt

cpu1 kernel file

cpu1 App file

3.Source/x.output/release/firmware/kerneL_cpu02.txt

cpu2 kernel file

cpu2 App file

Note

4.If the valve is powered on, power cycle it.If not, turn it on.(4/17)

Next

7. Select connected PC port

Firmware update

Select com port

COM3

3.Source/x.output/release/firmware/kerneL_cpu01.txt

cpu1 kernel file

cpu1 App file

3.Source/x.output/release/firmware/kerneL_cpu02.txt

cpu2 kernel file

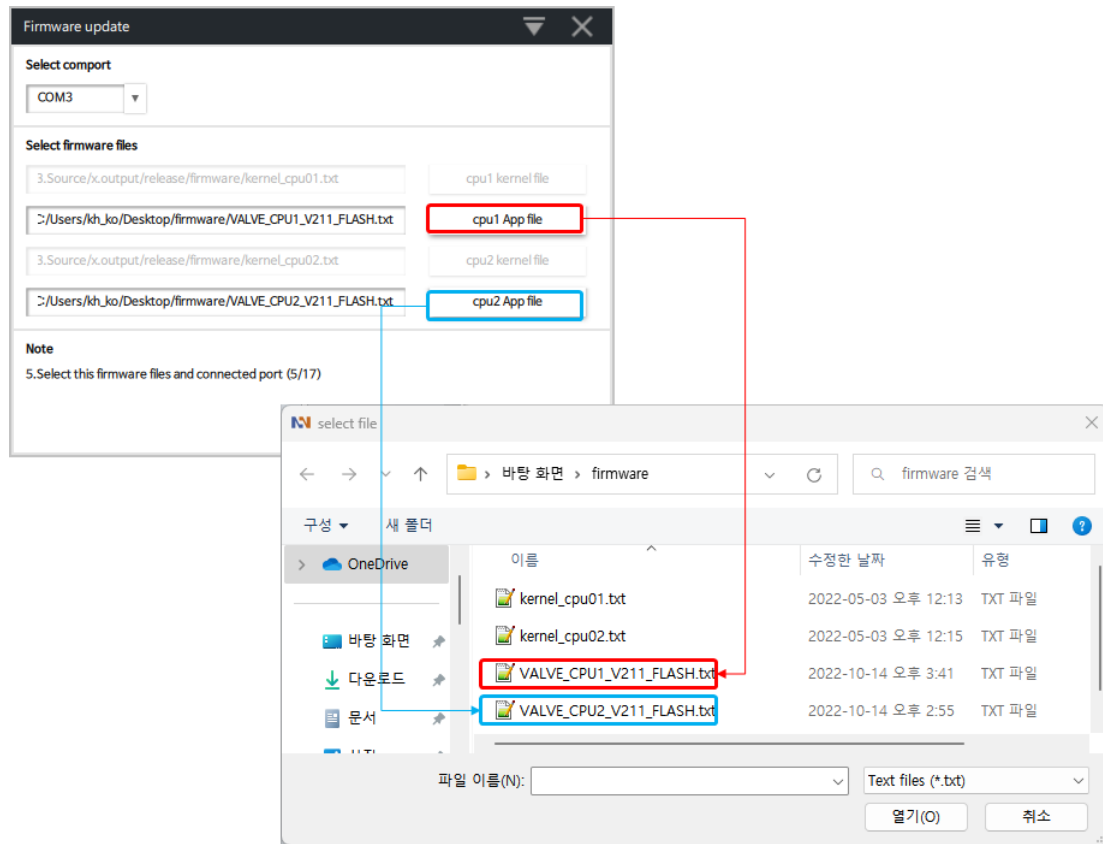
cpu2 App file

Note

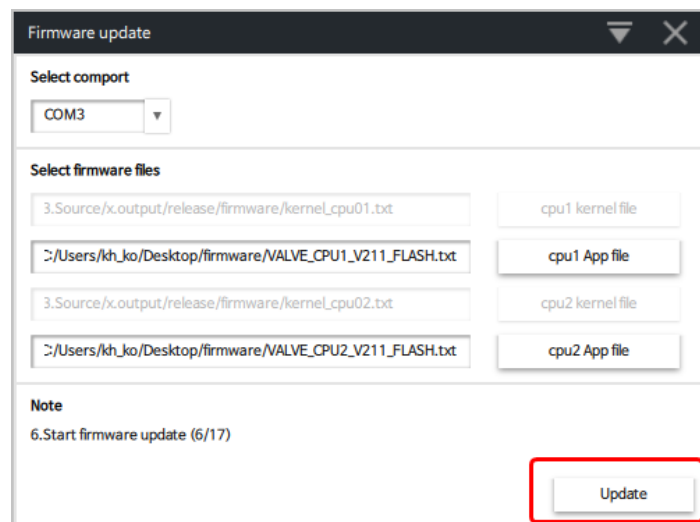
5.Select this firmware files and connected port (5/17)

Next

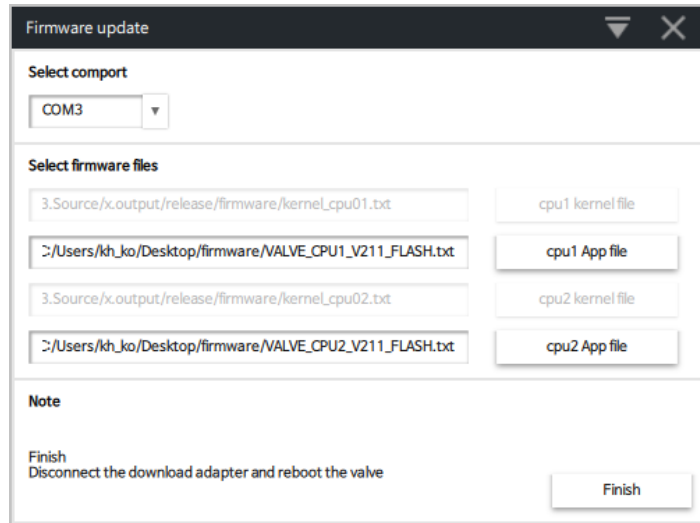
8. Select files for firmware update



9. Click [Update] to firmware update



10. Disconnect the download adapter and service cable after the firmware update is finished.



11. Reboot the valve.

16 NVM

16.1 Settings

The NVM Settings are used for adjustment of 'chart' (display) position, pressure and time axis.

NVM settings

Position indicator 10000 ▼ displayed resolution	Pressure indicator Torr ▼ displayed unit
Chart position axis show ▼ actual position show ▼ target position autoscale ▼ axis scaling	Chart pressure axis show ▼ actual pressure show ▼ target pressure autoscale ▼ axis scaling linear ▼ axis mapping 3 ▼ decades
Chart position axis 30 seconds ▼ displayed time interval	
Apply	
ready COM3-38400-7-1-E A-B-N-080-F-S-R4-D-2-R00F-000F	

17 Help

17.1 About

