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1 Overview

The 'StoreX Panel' is a software package designed to control all types of StoreX incubators.

It allows to perform:

- Climate control, including climate logging and drawing of Graphs
- Plate handling operations
- Incubator gate and carrousel control
- StoreX production tests
- Executing low-level direct commands

1.1 Connecting StoreX

After the program is started the following dialog will appear.

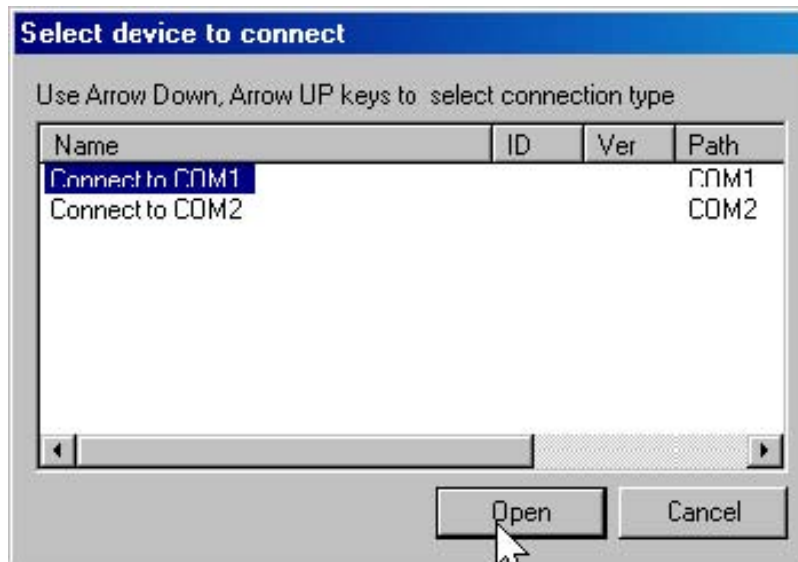




Figure 1: Connection dialog window

To connect StoreX, the user should select COM port and press **Open** button. To disconnect the StoreX the user should use  button on the main toolbar or 'StoreX\Disconnect' item from main menu. To connect StoreX again, the user should use  button on the main toolbar of 'StoreX\Connect' item from main menu.

After StoreX is connected, a Monitor window will appear.



Figure 2: Monitor window

The Monitor window shows serial number of StoreX, used COM port, Ready and Error flags, status value and also values of climatic parameters.

1.2 Toolbar and menu

The toolbar is located in the upper part of the 'StoreX Panel' Monitor window. It provides access to the most frequently used menu items through clickable buttons. All program's functions are divided by groups and located in the corresponding windows.


Using the toolbar the following windows are available:

- climate window
- commands window
- test window
- logging window
- graphs
- terminal window for entering direct commands

User can change positions of all windows and resize Graph, Terminal and Commands windows. Their positions and size will be stored in Windows Registry and will be restored on next run.

2 StoreX Panel

2.1 Climate window

To open the Climate window click on  button on the main toolbar.

The climate window displays values of current climatic parameters and allow to change climatic settings.

It shows 4 sections with current temperature, humidity, CO2 and N2 values.

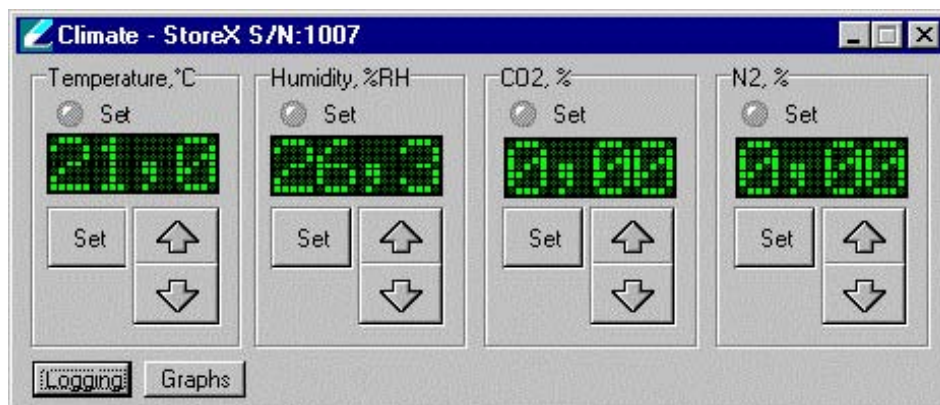


Figure 3: Climate window

To see and modify one of these settings the user should press **Set** button in the corresponding section. The setting value will be shown in blinking mode, arrow buttons will be enabled and 'Set' LED will be in active state.

The user can use arrow buttons to change the setting value. Then, after changes are made, the user should press the **Set** button again.

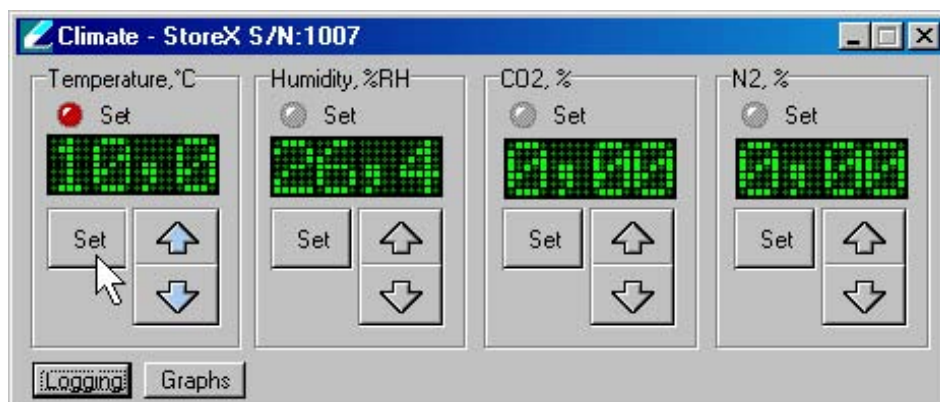


Figure 4: Climate window - set temperature

If the user don't press the **Set** button during 7 seconds, all changes will be discarded and the section will return to the previous mode.

If the StoreX doesn't allow to receive values of some parameters, for example CO2 or N2 values of these parameters will show 0.00.

The user can see all changes of climate parameters in the Graphs window.

2.2 Climate logging


To open the Climate window click on  button on the main toolbar.



Figure 5: Climate logging window

User should specify time interval and desired climate parameters. Log file will be created at StoreX Panel folder.

To start climate logging user should press **OK** button.


Log file is saved in following format:

File name of the log file will be YYMMDDNN.txt.

YY - year, MM- month, DD - day and NN - number of the log file.

```
Li conic StoreX S/N: 01007
Date      Time      Temp.  Hum.
16. 09. 2002  14: 39: 00  30, 5  26, 9
16. 09. 2002  14: 40: 00  30, 5  26, 8
16. 09. 2002  14: 41: 00  30, 5  27, 0
16. 09. 2002  14: 42: 00  30, 5  26, 9
16. 09. 2002  14: 43: 00  30, 5  26, 9
16. 09. 2002  14: 44: 00  30, 5  26, 8
16. 09. 2002  14: 45: 00  30, 5  26, 9
16. 09. 2002  14: 46: 00  30, 5  26, 8
16. 09. 2002  14: 47: 00  30, 5  27, 0
16. 09. 2002  14: 48: 00  30, 6  26, 9
16. 09. 2002  14: 49: 00  30, 6  26, 9
```

2.3 Graphs

To open the Graphs window click on  button on the main toolbar.

Graphs window allows to perform following operations:

- view all climate history since 'StoreX Panel' is launched
- zoom in and zoom out any particular graph
- scroll graphs in four directions

Only the values monitored by StoreX will be displayed.

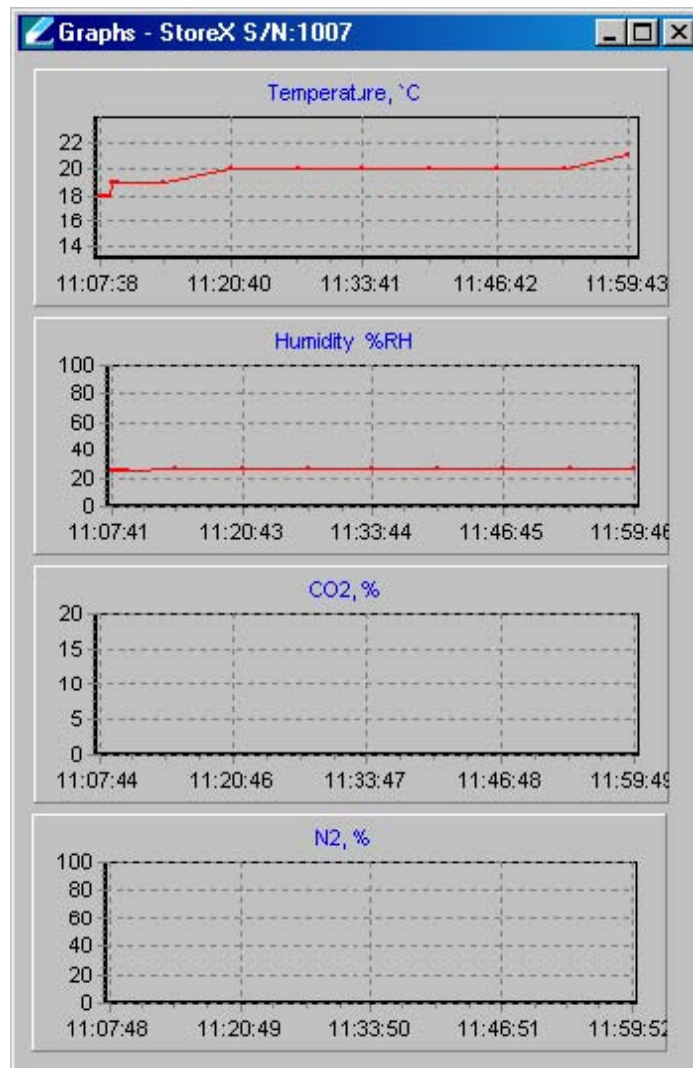


Figure 6: Graphs window

To scroll the graph press right mouse button on the graph and move mouse in desired direction.

To zoom in a part of the graph press left mouse button and draw box from upper-left corner to down-right direction. That move should be done in one shot.

To zoom in the graph press left mouse button and draw box from bottom-right corner to upper-left direction

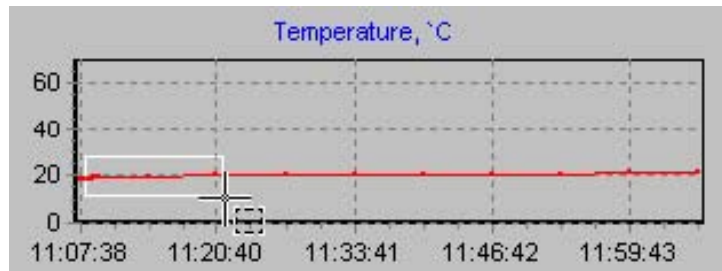



Figure 7: Zoom in

2.4 Command Window

To open the command window click on  button on the main toolbar.

The command window allows to perform following operations:

- loading plate to the incubator
- unload plate from the incubator
- pick and place plate to transfer from one slot/level position to another
- open and close the incubator gate
- perform reset operation
- carrousel control

2.4.1 Load and Unload operations

The way to perform load/unload and pick/place operation is to use Drag & Drop or popup-menu operations. Use left mouse button to drag a plate from storage to the Transfer Station and vice versa. Or perform right mouse click and select command from popup-menu.

To organize plates inside of StoreX use Pick/Place commands from pop-up menu or drag&drop inside the storage area.

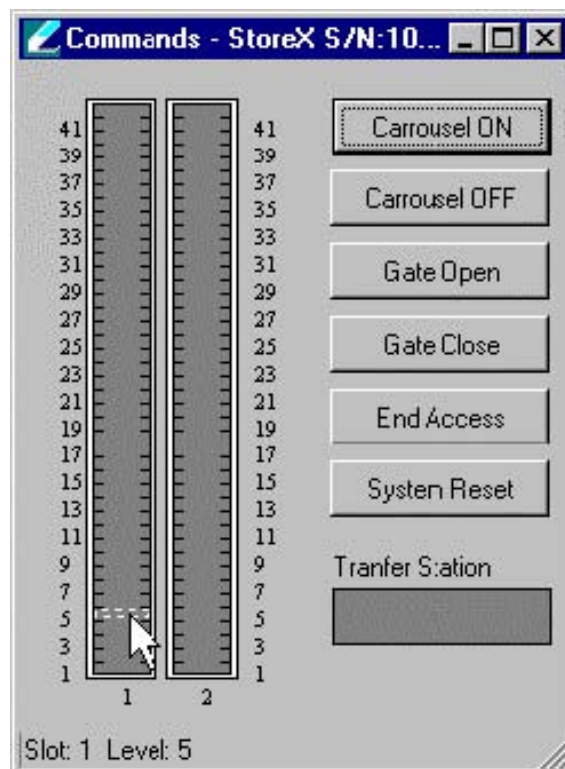


Figure 8: Unload plate at slot 1 level 5

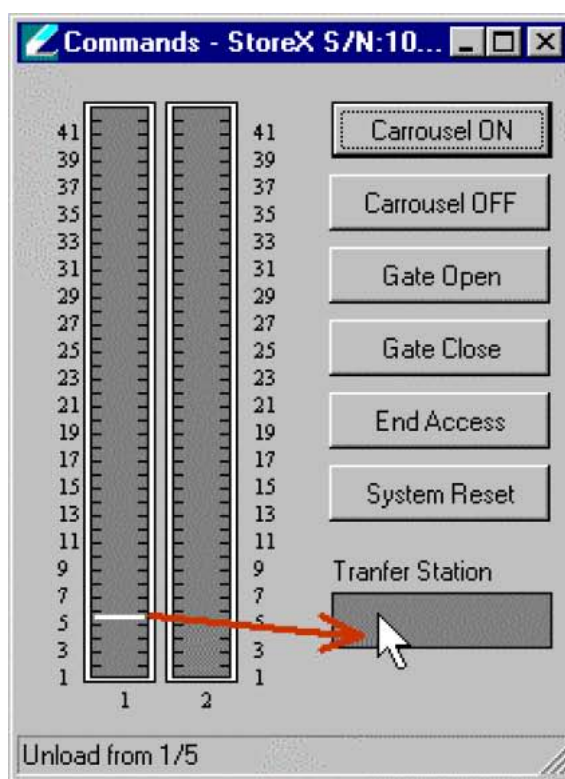


Figure 1 - unload plate at slot 1 level 5

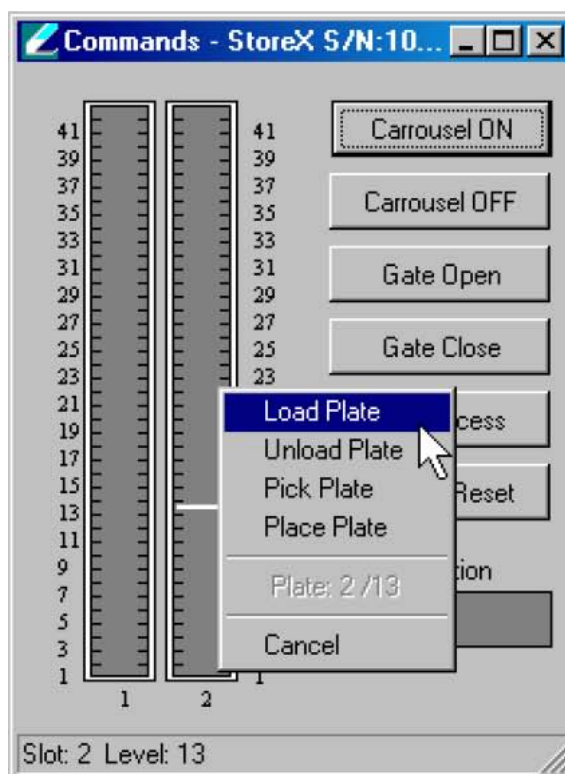


Figure 9: Using pop-up menu

2.4.2 Gate and carousel control

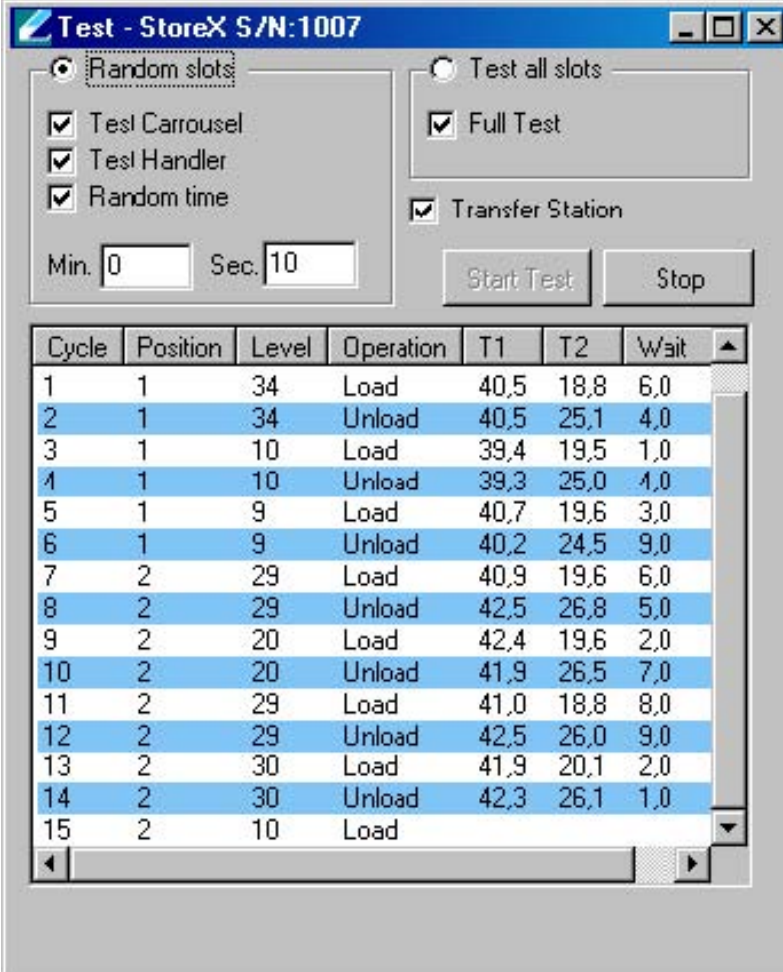
To execute gate, carousel or reset operations use corresponding buttons at the left side of the command window.

The button **End Access** can be used in some StoreX configurations to prevent the StoreX from waiting for plate removing from the transfer station.

2.5 StoreX Tests

StoreX tests can be preformed from the test window.

To open the test window click on  button on the main toolbar.



Cycle	Position	Level	Operation	T1	T2	Wait
1	1	34	Load	40,5	18,8	6,0
2	1	34	Unload	40,5	25,1	4,0
3	1	10	Load	39,4	19,5	1,0
4	1	10	Unload	39,3	25,0	4,0
5	1	9	Load	40,7	19,6	3,0
6	1	9	Unload	40,2	24,5	9,0
7	2	29	Load	40,9	19,6	6,0
8	2	29	Unload	42,5	26,8	5,0
9	2	20	Load	42,4	19,6	2,0
10	2	20	Unload	41,9	26,5	7,0
11	2	29	Load	41,0	18,8	8,0
12	2	29	Unload	42,5	26,0	9,0
13	2	30	Load	41,9	20,1	2,0
14	2	30	Unload	42,3	26,1	1,0
15	2	10	Load			

Figure 10: Test window

To start tests the user should:

1. Remove all plates from the StoreX.
2. Put only one plate transfer station or on position 1,1, depending *Transfer station* option.
3. Click **Start Test** button.

When tests is stopped by the user, and after finishing of the last operation, the result window will show a tests statistic.

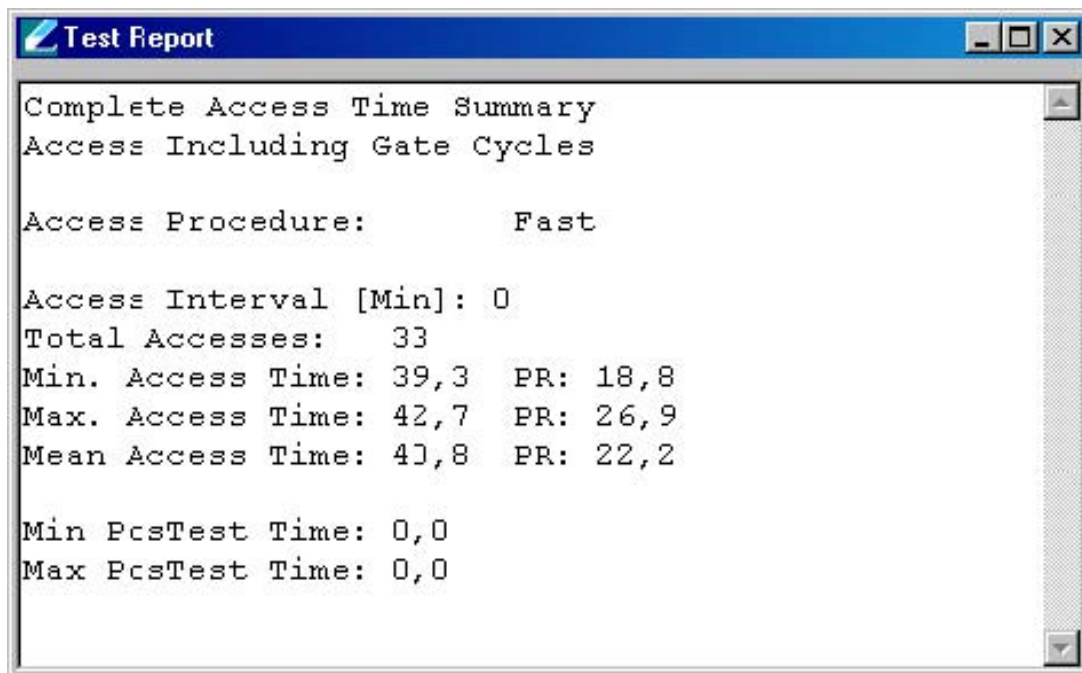


Figure 11: Test report

Test all slots - Random slots

Depending on this choice StoreX will move plate from one position in storage to another in all slots or use random slots.

Full test

StoreX will load and unload the plate on each level in slot. If option is unchecked only lowest and highest levels will be used.


Transfer Station

If this option is unchecked, the StoreX will only move the plate from one position to another bypassing Transfer Station.

Random time

After ending of operation, the StoreX will make the delay, before next operation. The Delay time is specified in **Min** and **Sec** fields.

2.6 Direct commands - terminal window

To open the terminal window, click on  button on the main toolbar.

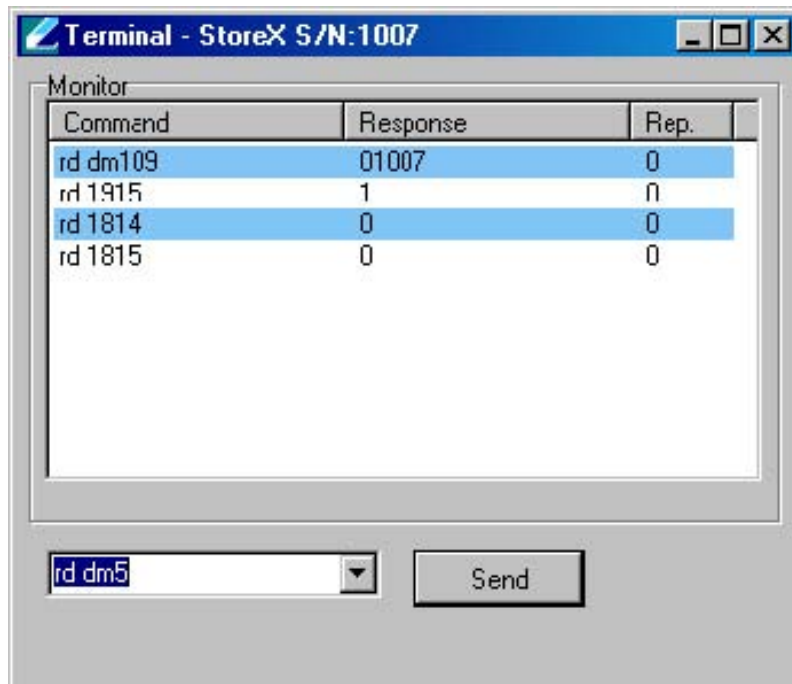


Figure 12: Terminal window

The terminal window can be used to send low-level PLC commands to the StoreX. You can type in command in the empty field in left-down corner and use the **Send** button to execute commands. After, sending a command the response will be shown in the terminal window.

The terminal window can display all low-level commands that the 'StoreX Panel' sends to the PLC. This option is switched off by default. To switch on this option, use '**Window/Show Commands**' menu item.