WIZ Panel
SOFTWARE
OPERATING MANUAL
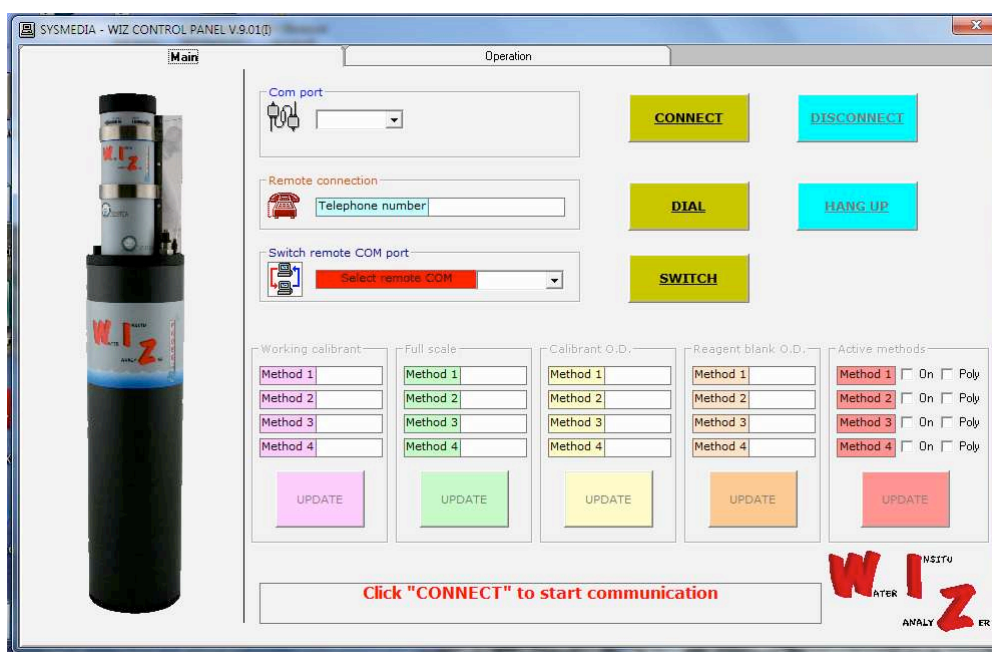
Manual Version	Software version	Prepared: Sysmedia	Verified: TM	Checked: QM	Approved: MD	Issued:
1.0	9.0X					

SUMMARY

1. Introduction

The WIZ panel software, running on PC under Windows OS, is an application which dialogues with SYSTEA **WIZ probe** using the RS-232 or RS-485 serial port, available from the external electric connector.

Using the RS-485 communication, a RS-485/232 converter is provided to connect the WIZ to a PC, running Windows OS.

The software has to be used by the operator:

- to edit and modify the main operation parameters
- to check the real-time OD value during measures
- to edit the measures stored in the WZ memory
- to edit and modify the monitor settings
- to download the memory buffer with measured data.

WIZ Panel Software ins the user interface with the WIZ and has to be used to run all the required operations.

The software can be used:

- locally, with the PC directly connected to the probe using the RS-232 serial cable provided with the instrument

- remotely, with the PC connected to the probe using a GSM modem ; inquiry to SYSTEA to know the right configuration parameters to be used on the GSM device.

Note

1) *All operations described in the present manual are intended, when not expressly specified with the probe on. To turn the probe on simply connect the power cable to 12Vdc line and wait 45 sec. to allow the firmware booth*
2) *All parameters value retrieved from the probe and showed on the WIZ software have been set during the factory test and are reported on the Final Test delivered with the documentation package. Use the factory settings as reference, unauthorized modification of factory settings may create severe malfunctions and problems.*
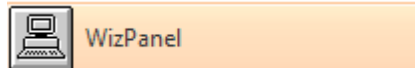
2. Software installation

To install the WIZ panel into the PC, please insert the CD-ROM and start the **setup.exe** program which will automatically install the software in the hard disk of the PC.

3. Software start-up

To run the WIZ panel program, select WIZ Panel form the program menu and double clik.

4. Panel software description

The program is divided into two foldersmenu:

- **Main**
- **Operation**

The **Main** folder edit all the information retrieved from WIZ when get connected, alow to modify the setting and send the new value to WIZ.
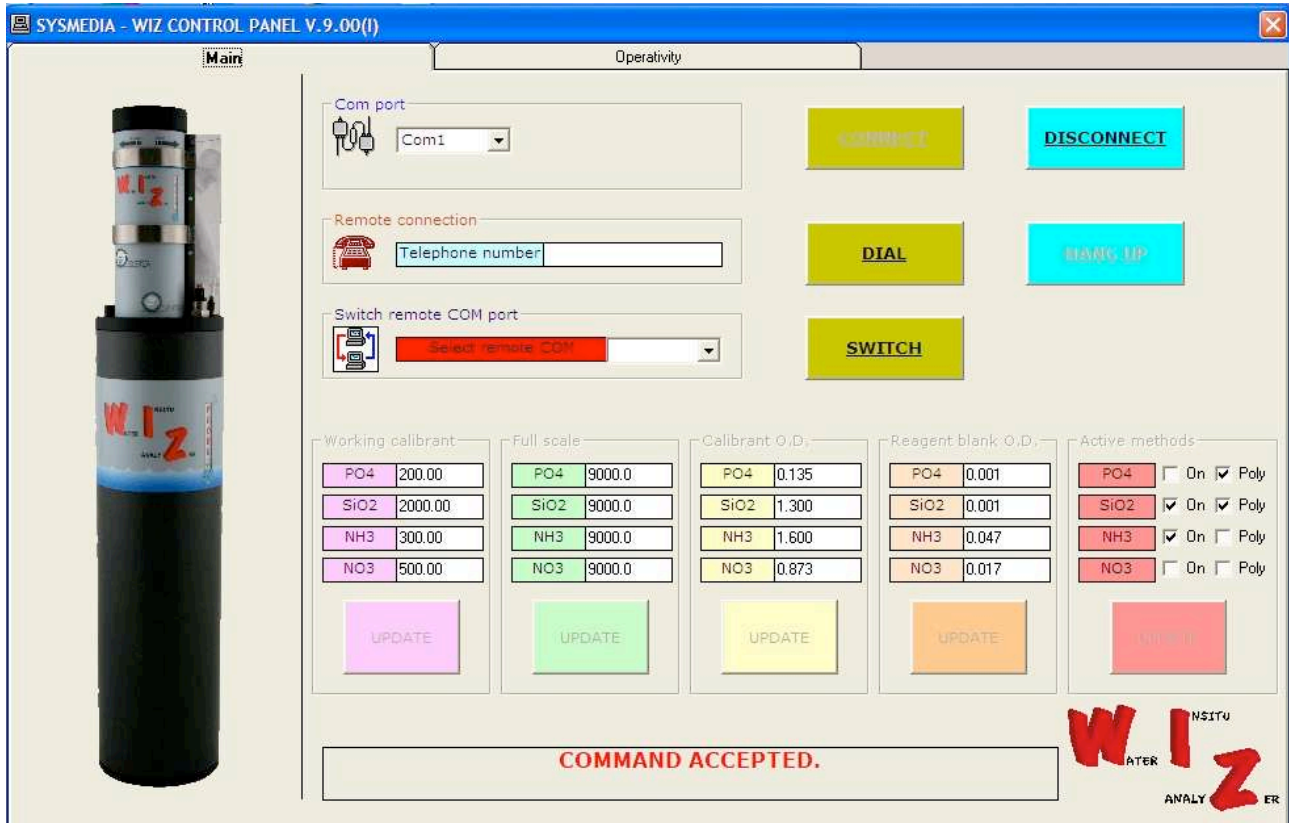
The **Operation** menu includes following submenus:

- **Direct commands:**
  - **General:**
  - **Polynomial**
- **Graphs**
- **Results**
- **Editor**
- **Disk and Files**
- **General**
- **Polynomial**

To close the program, simply click on the **X** button located on the top right of the program window.

4.1 Main menu

4.1.1 Available options

- **Com Port**: select the PC serial COM # used for connection.
- **Connect**: start **RS232 connection**, trough the serial port,
- **Disconnect:** close RS232 connection
- **Remote Connections**: enter the telephone number for remote connections trough a GSM modem
- **Dial**: start telephone # dialling
- **Hang Up**: to terminate remote connections trough telephone line
- **Switch Remote Com Port**: not active in this version
- **Switch:** not active in this version
- **Working parameters**:
  - Working calibrants: calibrant concentration used for calibration
  - Full scale: concentration value over that the measure is considered not linear; WIZ will reanalyze the sample using the dilution cycle where the sample is diluted before analisys.
  - Calibrant OD: OD measured and stored for the Working Calibrant, when run the calibration
  - Reagent Blank OD: OD measured and stored when run the Reagent Blank
  - Active methods: show show whichthe active methods
  - Poly: show which method are calibrated with a non linear equation

Note

1) *Connection status is showed on the bottom*

2) *All the parameters values are stored inside the WIZ, and are downloaded to PC during the PC<->Wiz connection. Alla parameters can be changed and restored using update. All downloaded values are saved inside the PC*

3) *All parameters value retrieved from the probe and showed on the WIZ software have been set during the factory test and are reported on the Final Test delivered with the documentation package. Use the factory settings as reference, unauthorized modification of factory settings may create severe malfunctions and problems.*

4.1.2 Modify working parameters

To modify any numeric value, be sure to have established a connection, then just click inside the field to be modified and digit the new value.
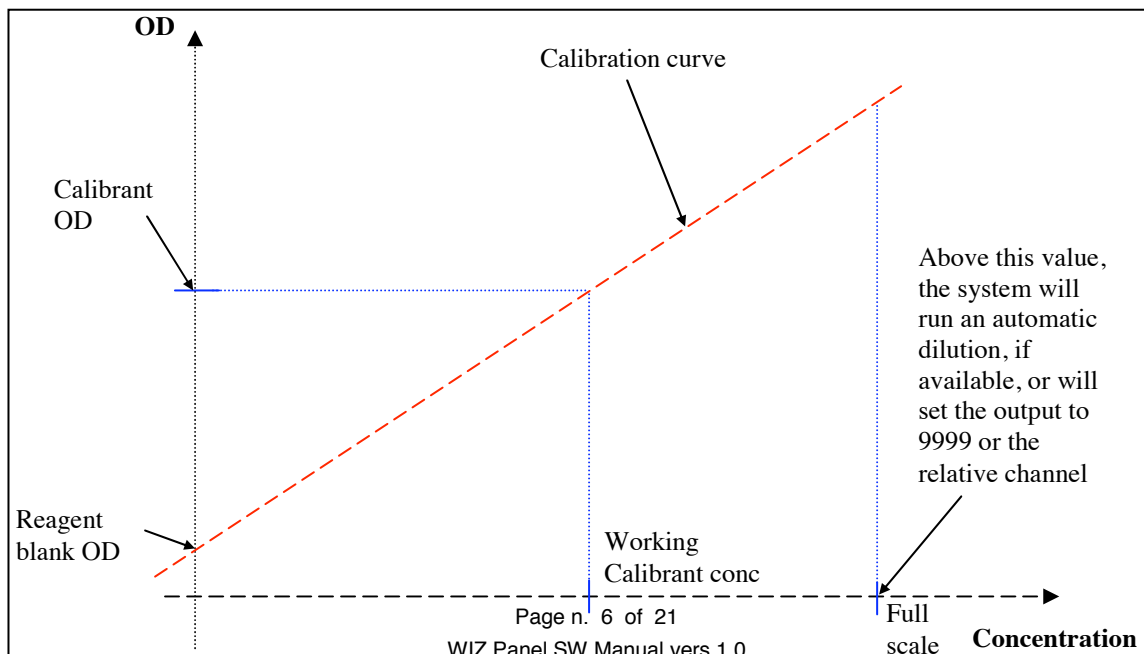
To send the new value to the probe click on the **Update** of the specific section

4.1.2.1 Working parameters details

Working parameters listed per method (1…4) are:

a) **Working calibrant**,: is the value in concentration units of the parameter to be measured in the calibration solution

b) **Calibrant OD:** is the OD (Optical Density) value, that is measured and stored in the probe after the calibration procedure

c) **Full scale:** is the maximum linearity of the method over this value results are not valid anymore and if the sample is reanalyzed on the dilution cycle if active if not the results will be showed as 9999.

d) **Reagent blank OD**: is the Reagent Blank OD measured and stored in the probe after the blank measurement procedure. The standard calibration curve is made by the two Ods, the Reagent Blank OD and the Calibrant OD. The concentration of the reagent blank is always assumed as zero. In case of polynomial calibration the WIZ uses 5 pints + reagent blank, see point XXX.

Example of a calibration curve

OD

Calibration curve

Calibrant OD

Above this value, the system will run an automatic dilution, if available, or will set the output to 9999 or the relative channel

Reagent blank OD

Working Calibrant conc

Full scale

Concentration

4.1.3 Modify Active methods and Polynomial set

Select/Deselect a method just by clicking in the method box. Click on **Update** to send the new settings to the probe.Operativity

Factory settings are showed on the final test of the WIZ.

4.1.4 Direct Commands - General

4.1.4.1 Commands for active methods

Available options:

- **Start Analysis**: probe starts analysis on all active methods, see Main menu – Active methods
- **Start Dilution**: probe runs a dilution then a measure, on all active methods,. It is assumed that sample has been detected as an off scale sample that exceed the Full scale value. This option is not available on all units
- **Start Calibration**: probe starts a calibration on all active methods, Active methods; the new Cal OD can be retrieved and accepted if the case form Results – Last Results request, see point XXX.

- **Start Blank**: probe starts the reagent blank measure on all activated methods and store the new Reagent Blank OD, take care to note the previous Reagent Blank OD for cross check and evaluate a possible reagent/DI water pollution.
- **Stop:** breaks any operation in progress: this command is always active, and is also used to exit from monitoring.
- **Send FXXXX (Direct command):** to send a direct command to the probe, such as F000, to start the analysis cycle of the method in first position. See the direct command list for further details on the system manual.

Note
Misuse of Direct commands may cause severe problems, do not use without specific training and knowledge of the direct command syntax and meaning.

4.1.4.2 Single Wash/Prime

Single Wash/Prime options allows to prime or run a wash or prime on each method.
  a) **Select** a method to be washed or primed then:

   a.1) **Start Wash** to run a wash on the selected method

   a.2) **Start Prime** to prime all reagent lines of selected method. Use this option has each reagents changeover or to fill all reagents line with DI water when the probe will be not used for more than 2/3 days.

4.1.4.3 Dilution ratio/Dilution factor
Allows to:
  a) **Dilution ratio:** read and/or modify stored ratio per each method: this value sets, by controlling a proper valve, the sample dilution ratio with a range from 01 (one second of sample and one second of diluent) to 09 (one second of sample and nine seconds of diluent)
  b) **Dilution factor:** read and/or modify the stored factor per each method; this is the value used as correction factor during the dilution analysis.

Note
Dilution option is not available on all units

4.1.5 Sample and reference visualization

This has to be used in conjunction with LED Current Settings, allows to display the sample voltages of a selected LED and reference and, by changing the current settings:
- Colorimetric detector: adjust the sample voltage if necessary; the reference voltage on colorimeter is an hardware setting and cannot be adjusted from the external.
- Fluorimetric detector: adjust the reference voltage if necessary, the sample voltage on fluorimeter in an hardware setting and cannot be adjusted form external.

The sample and reference voltage check must be performed with the flow cell filled with DI water and the probe in stand by. This status may be obtained running a wash on one of the active methods.

Reference and sample detector have a span from 0 to 5 VDC, normal settings for colorimetric detectors is between 1 and 4 VDC and the reference value is normally higher than the sample, to have a slightly positive OD, while for Fluorimetric detectors sample when the flow cell is filled with Di water always shows 0 VDC while reference is around 2.5VDC

LED installed on a standard WIZ:
0 = 525 nm (Nitrate, Nitrite, TN)
1 = 880 nm (Phosphate, Silicate, TP)
2 = 370 nm (Ammonia fluorimetric)

Steps to display the Sample and Reference voltage:

a) Led Current Settings:
    1) LED N: select the LED to be turned on: Enter 0, 1 or 2
    2) Click on **READ**
    3) The DAC VALUE field will show the actual current settings for the selected LED
    4) Click on **SEND** to turn on the selected LED using the actual current settings
b) Sample and Reference visualization
    1) Click on **START**
    2) The reference and sample voltage for LED 0 or 1 are showed inside the fields Sample 0 and Ref 0 while the reference and sample voltage for LED 2 are showed inside the fields Sample 1 and Ref 1.
    3) Click on **STOP** to exit from the procedure

Steps to adjust the Sample voltage on Colorimetric detector and Rerence voltage on Fluorimetric detector
    1) LED N: select the LED to be turned on: Enter 0, 1 or 2
    2) Click on **READ**
    3) The DAC VALUE field will show the actual current settings for the selected LED, to increase the voltage (Sample channel for Colorimeter Reference channel for Fluorimeter) increase the DAC value, and the opposite to decrease.
    4) Click on **SEND** to turn on the selected LED using the new current settings
b) Sample and Reference visualization
    1) Click on **START**
    2) The reference and sample voltage for LED 0 or 1 are showed inside the fields Sample 0 and Ref 0 while the reference and sample voltage for LED 2 are showed inside the fields Sample 1 and Ref 1, check that the new values fits.
    3) Click on **STOP** to exit from the procedure

Following information can be used for troubleshooting on colorimeter detectors:

a) the reference is normally higher than the sample (about 10 %, e.g. 4.1 VDC ref and 3.7 VDC sample)

b) If the reference voltage is 10 times higher than the sample, the OD must be 1

c) if the reference voltage is lower than the sample, the OD is negative

d) if one of two readings or both are at 5 VDC, the channel/s is/are on full scale, and the colorimeter will not work properly:

e) if one of two reading is at zero VDC, may be the colorimeter cable is disconnected or the LED is not on. If only the sample voltage is at zero, the flow cell is out of place obstructing completely the light path, or it is dark: check and replace if necessary.

4.1.5.1 Temperature_1 settings

Allows to edit and modify if necessary the temperature settings of the heating bath

a) **TMANT:** maintaining temperature, this temperature is maintained even when not in analysis: do not change without consulting a Systea engineer.

b) **XVTSET:** temperature set during the reaction, for the method with the temperature; this value is reached during the analyses.

c) **XVTIME:** temperature maintaining time (expressed in seconds) during analysis, for the XVTSET; after this time has finished, the system will go back to TMANT temperature.

4.1.5.2 Read Temperature values

Allows to edit the actual temperature of the Heating Bath , the heating bath temperature is showed in the field T1 °C , the field T2 °C is not used in this version

4.1.5.3 Exit to Interserver

Not used in this version

4.1.5.4 Monitor Parameters

Allows to:

a) Read the probe monitor parameters stored in the memory such as Sampling frequency, Recalibration Frequency etc.

b) Change and update the monitor parameters

c) Start monitoring

To edit/modify the monitor parameters the status field on the bottom of the menu has to report "Connected", if not go back to main menu, connect the probe and try again.

4.1.5.4.1 Read monitor parameters

Click on **Read** to download the monitor parameters stored in the probe:

a) **Sampling Frequency (Minutes):** sampling frequency in minutes, ex. 360 means that every 360 minutes the probe starts a new sampling cycle on all active methods

b) **System Check Frequency (N. of samples):** system frequency in number of sampling; ex. 12 means that every 12 samples the probe run a System Check cycle for all the active methods.

Note:
The System Check measure a concentrated calibration standard contained in the C7 bag. The calibrant is diluted then analyzed the result is used as QC to check the repeatability trough the time.

c) **Save from position:** first position of the memory for data saving; ex. zero, means that new results will be saved starting from position n. 0, all existing values will be overwrite.

4.1.5.4.2 Change monitor parameters

Just click inside the field and digit the new value accordingly with the actual needing, then click on **Update**, wait until the bottom bar confirm the data download.

4.1.5.4.3 Start monitoring

Just Click on **Start**, wait until the bottom status bar confirm that command has been accepted.

Note

As soon the monitor is activated, the probe does not start immediately, but it waits until the sampling frequency time expires: this feature has been done to allow programming of the probe then after switching off, deploy the probe to the field. After deployment and switching on, the probe runs a wash cycle, resuming the original monitoring status, with the previous set parameters.
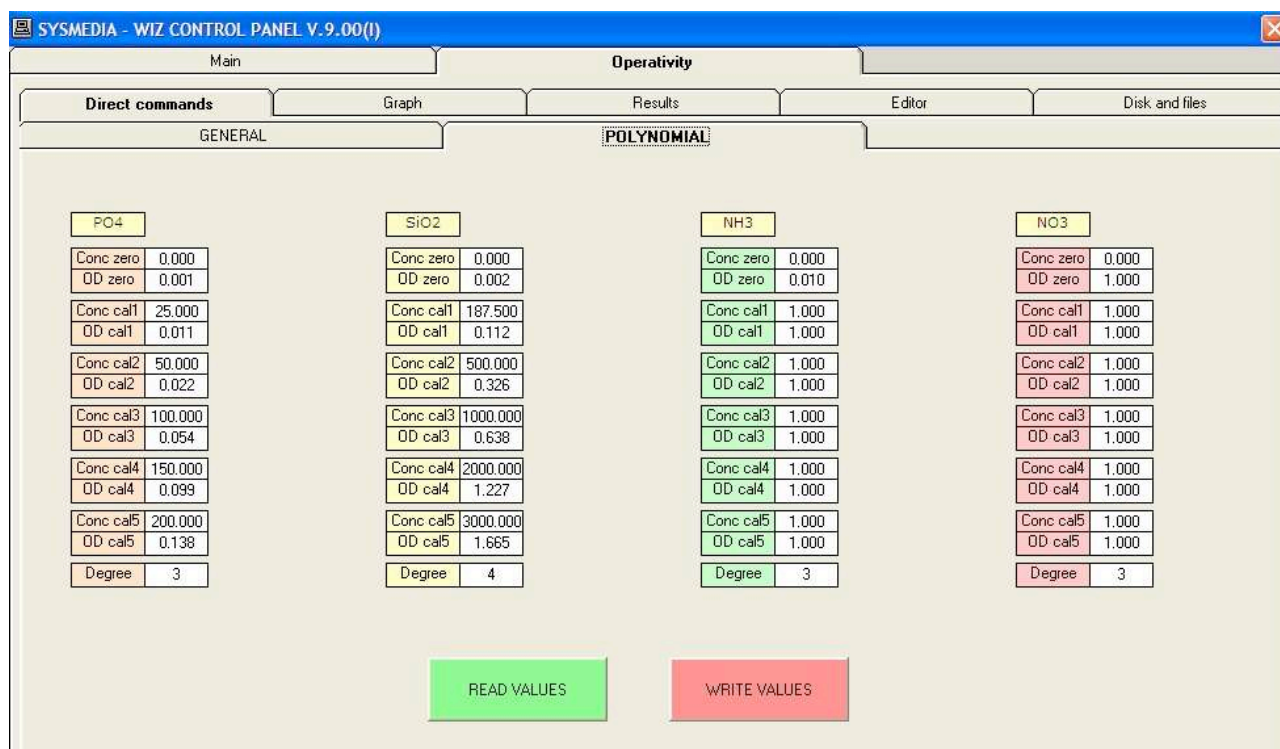
If it is necessary to run the first cycle immediately after the Start Monitoring, go back to Operation, Direct Commands, then click on Start Analysis.

4.1.5.5 Led Current setting

See Sample and Reference visualization

4.1.6 Direct Commands – Polynomial

SYSMEDIA - WIZ CONTROL PANEL V.9.00(I)

Main | Operativity

Direct commands | Graph | Results | Editor | Disk and files

GENERAL | POLYNOMIAL

	PO4		SiO2		NH3		NO3
Conc zero	0.000	Conc zero	0.000	Conc zero	0.000	Conc zero	0.000
OD zero	0.001	OD zero	0.002	OD zero	0.010	OD zero	1.000
Conc cal1	25.000	Conc cal1	187.500	Conc cal1	1.000	Conc cal1	1.000
OD cal1	0.011	OD cal1	0.112	OD cal1	1.000	OD cal1	1.000
Conc cal2	50.000	Conc cal2	500.000	Conc cal2	1.000	Conc cal2	1.000
OD cal2	0.022	OD cal2	0.326	OD cal2	1.000	OD cal2	1.000
Conc cal3	100.000	Conc cal3	1000.000	Conc cal3	1.000	Conc cal3	1.000
OD cal3	0.054	OD cal3	0.638	OD cal3	1.000	OD cal3	1.000
Conc cal4	150.000	Conc cal4	2000.000	Conc cal4	1.000	Conc cal4	1.000
OD cal4	0.099	OD cal4	1.227	OD cal4	1.000	OD cal4	1.000
Conc cal5	200.000	Conc cal5	3000.000	Conc cal5	1.000	Conc cal5	1.000
OD cal5	0.138	OD cal5	1.665	OD cal5	1.000	OD cal5	1.000
Degree	3	Degree	4	Degree	3	Degree	3

READ VALUES | WRITE VALUES

WIZ firmware from version 2.09 allow to use non linear calibration fit. To use the polynomial option measure the reagent blank and a set of 5 calibrants properly distributed within the calibration range. The measures have to be robust then before accept a measure repeat at least 3 times the be sure that the OD end value is consistent.

Fill the table with all the values then select the polynomial order from 2 to 4.

To send the values to WIZ click on WRITE VALUES, to read the values stored in the WIZ memory click on READ VALUES.

To adjust a polynomial calibration is niot necessary run again the comlete set of calibrants but as for linear method is enough run the working calibrant, the new OD if accepted will be used to normalize and adjust the complete set of values.

For more information on calibration procedures see point XXX.

4.1.7 Graphs menu
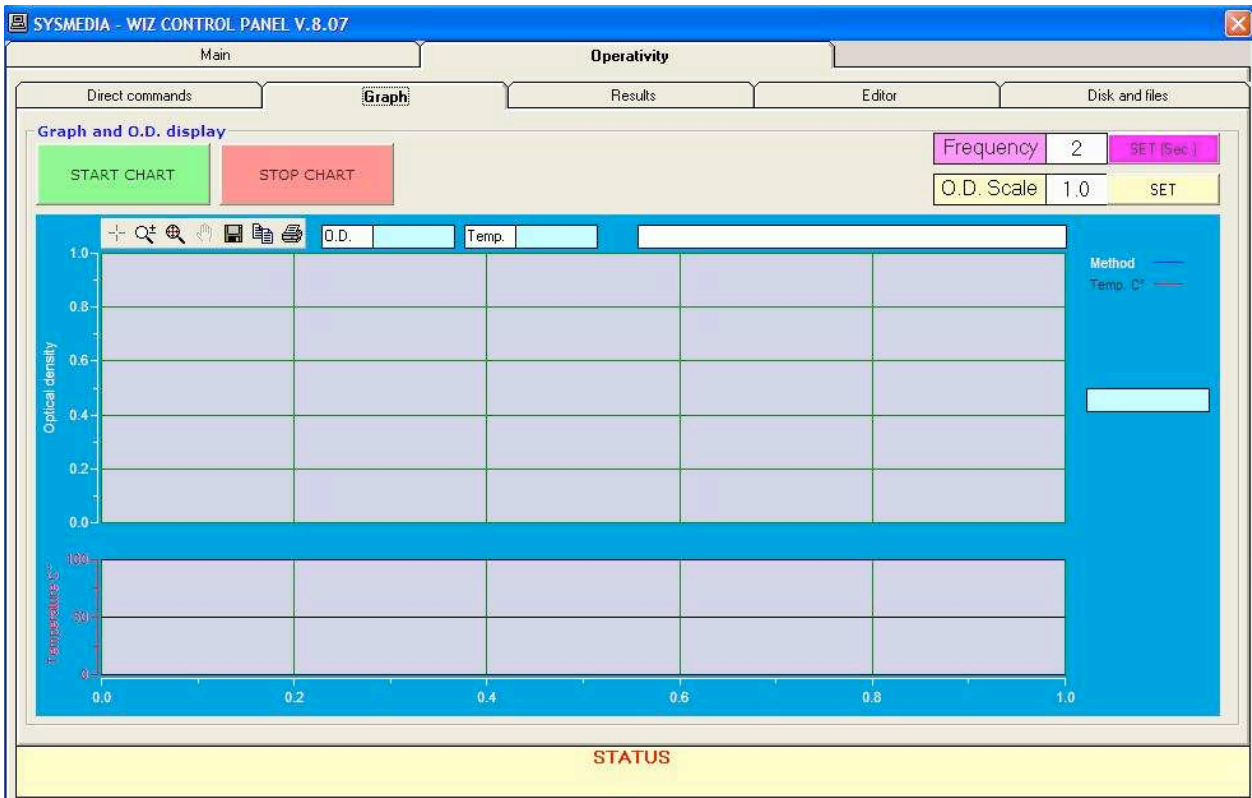
Allows to display the real time Optical Density (O.D.) measured by the colorimeter

To start OD reading click on **START CHART**, to stop cilck on **STOP CHART.**

After stopping, the graph lines remains on the display until a new display session is started or the program is closed.

By changing the **O.D. scale** value, the Y scale of the graph is reassigned, the default value is 1.0 OD.
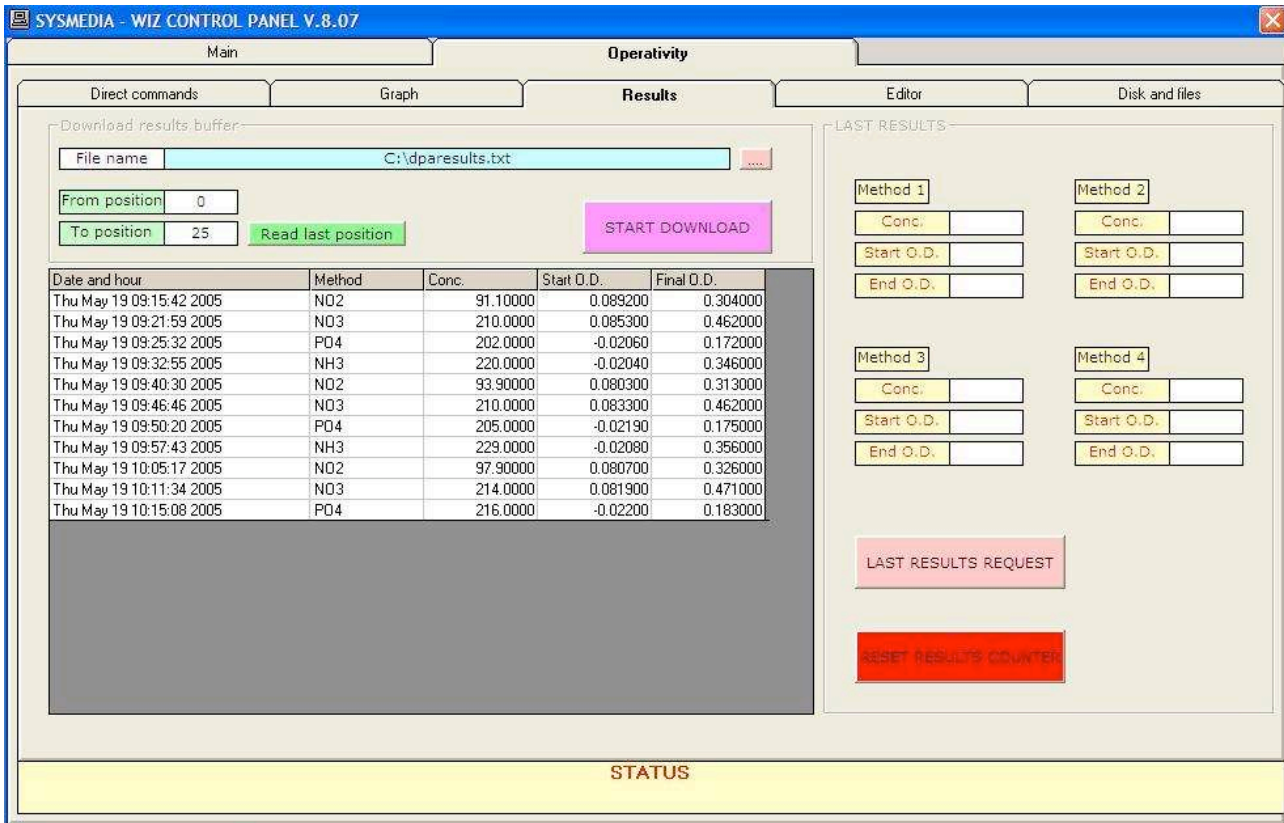
To change the number of points used to for the graphic enter a new values in the **Frequency** field then confirm with **Set.** Suggested value is 2 seconds.

Note
When the OD graph is ON, all other commands are ignored; to send any other command, it is necessary first to STOP GRAPH.

4.1.8 Results menu

Allows to download for the probe buffer and display all results between selected interval and store them in a text file.

a) **File name**: select the path and the file name for the results file by selecting [.....]

b) **From Position**: usually zero is the first position of the memory buffer to be downloaded

c) **To position**: is the last position of the memory to be downloaded

d) **Read last position:** shows the last used and available memory position and report the memory position in the field the **To position**

Click on **START download** to start data recall from the probe memory. During the operation, the bottom communication bar show the flashing message "Downloading selected results, please wait"; the message "Download complete" prompt the operator when download is complete

Measured data are saved and displayed; move the cursor on the right of the values to scroll among the data;.

To save the last position downloaded click **RESET results counter** to set the last position as starting for next download. The value next to last position will be automatically used as new Start position (**From Position**)

Note

After the internal memory is completely full (maximum number of results is 400) new result exceeding the memory capability is saved on the first position and the old result is overwritten.

4.1.8.1 Last result request

Allows to display the last results complete of OD Start and OD End, if the last measure has been a calibration the software shows the following menu.

Copy: on side of each method the option Copy allow to accept the calibration and copy the OD Cal value on the Main Menu as Calibrant OD.
Conc: in case of calibration shows the measured OD Cal
Start OD: reports the OD Start (Sample Blank)
End OD: shows the OD Cal actually stored in the WIZ

Comparing the new OD Cal and the OD Cal stored the operator can decide if the new OD Cal can be accepted (usually a difference of +/- 20% is acceptable), if yes just click on copy to transfer the new OD Cal value in the Main menu as Calibrant OD.
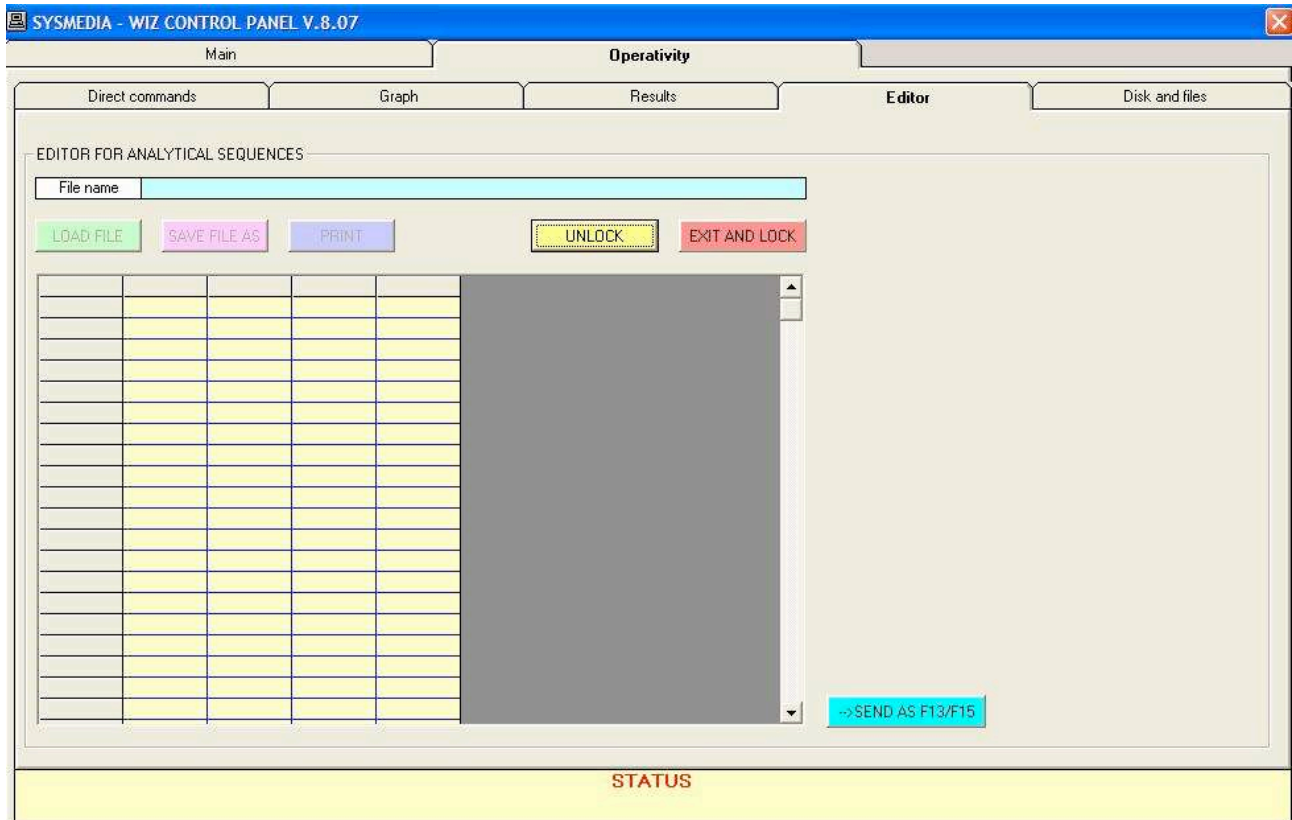
Note
1) ***When the OD graph is ON, all other commands are ignored; to send any other command, it is necessary first to STOP GRAPH.***

2) ***After having copied the OD Cal on the Main menu to transfer results to WIZ click on UPDATE, if not the new values will not be copied.***

4.2 Editor menu

Editor option allow to edit/modify all cycles previously downloaded from Disk and File options. The editor functions are protected by a password to avoid any unauthorized cycles modification.
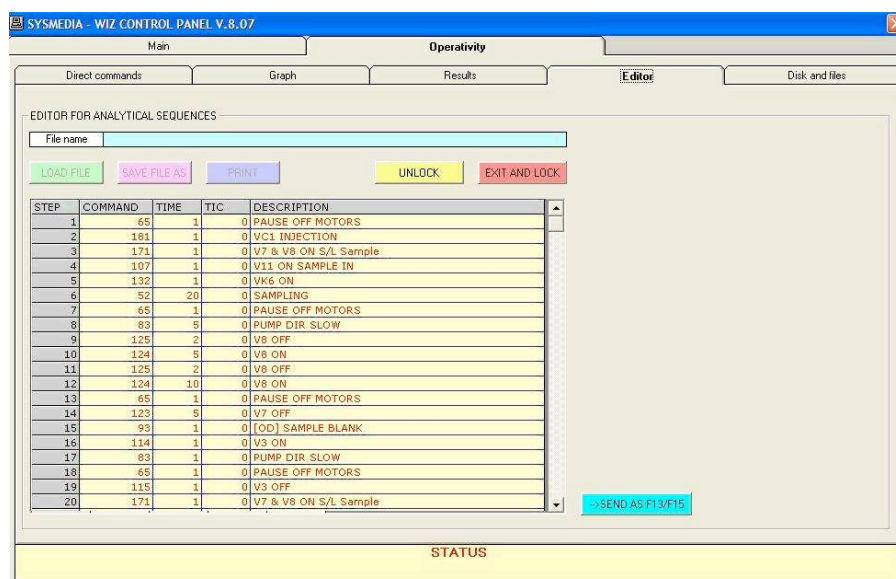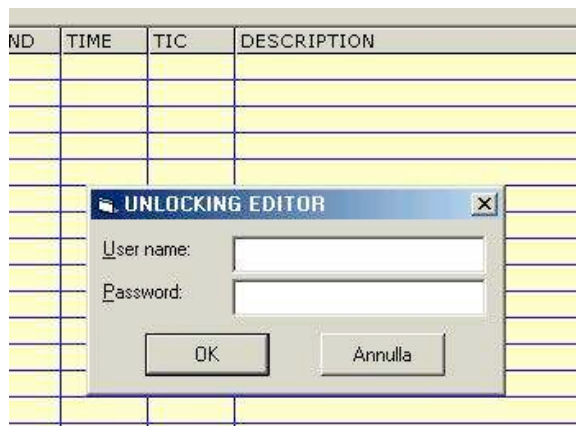
Note

Download, modify and reload a cycle is reserved to specialized personnel trained at Systea factory. Any cycles change could severely affect the probe operations.

1) To load and edit a cycle the Editor option has to be as unlocked; to Unlock the Editor click on "Unlock"

User name: systea
Password: *systeaunlock* (note that the asterisks are part of the password)

2) After the Unlock procedure has been successfully passed click on [LOAD FILE], then select the Cycle to be edited. The file has to be in a folder of main hard disc (C:\).

Note :
The folder has to be created before start the software.

Note
A cycle to be Edit/Modified has to be previously downloaded and saved on the PC hard disk from the probe internal DiskOnChip. Cycles usually are download under .txt format in files having following name structure: CycleYX, where Y is the method number form 0 to 3and X the cycle number of the method Y. Usually X=0 means analysis cycles, X=1 means calibration cycle; X=2 reagent blank cycle, X= 3 means wash cycle, X=5 means Prime cycle. All cycles have to be saved in a folder of the main disk (C:\)

3) To modify a Command or an Time just double click on the value to be changed, commend description is automatically inserted by the software.

STEP	COMMAND	TIME	TIC	DESCRIPTION
1	65	1	0	PAUSE OFF MOTOR
2	181	1	0	VC1 INJECTION
3	171			S/L Sa
4	107			PLE IN
5	132			

Insert step   CTRL+I
Delete step   CTRL+D

4) To insert or delete a step click with the right button where the step has toto be inserted or deleted, then select the option form the menu. A message box will prompt the operator before go on.

When the cycle has been properly modified use the "Save as" button to save it with the same or a new name. Before go on with Cycles modification is strongly recommended to create a backup copy.

4.2.1 Send as F13/F15

Allows to send a series of direct commands for test purposes, just write the commands to activate the device to be tested then Click on SEND AS F13/F15.

All commands are reported on the Hydraulic diagram delivered with the WIZ.
As example to check if the pump runs and if DI water in properly pumped:

   a) Disconnect the DI water bag line and insert the tube in a graduated cylinder
   b) Run the pump trough a test cycle; then enter:
   171,1, 0: to open the loop and connect on the inlet line the DI water bag
   56, 1,60: this command turn the pump On in fast mode for 60 seconds
   65,1,0: stops the pump
   62,1,0: Stop the execution
   199,1,9 Exit from cycle
   c) Click on SEND AS F13/F15

4.3 Disk and Files
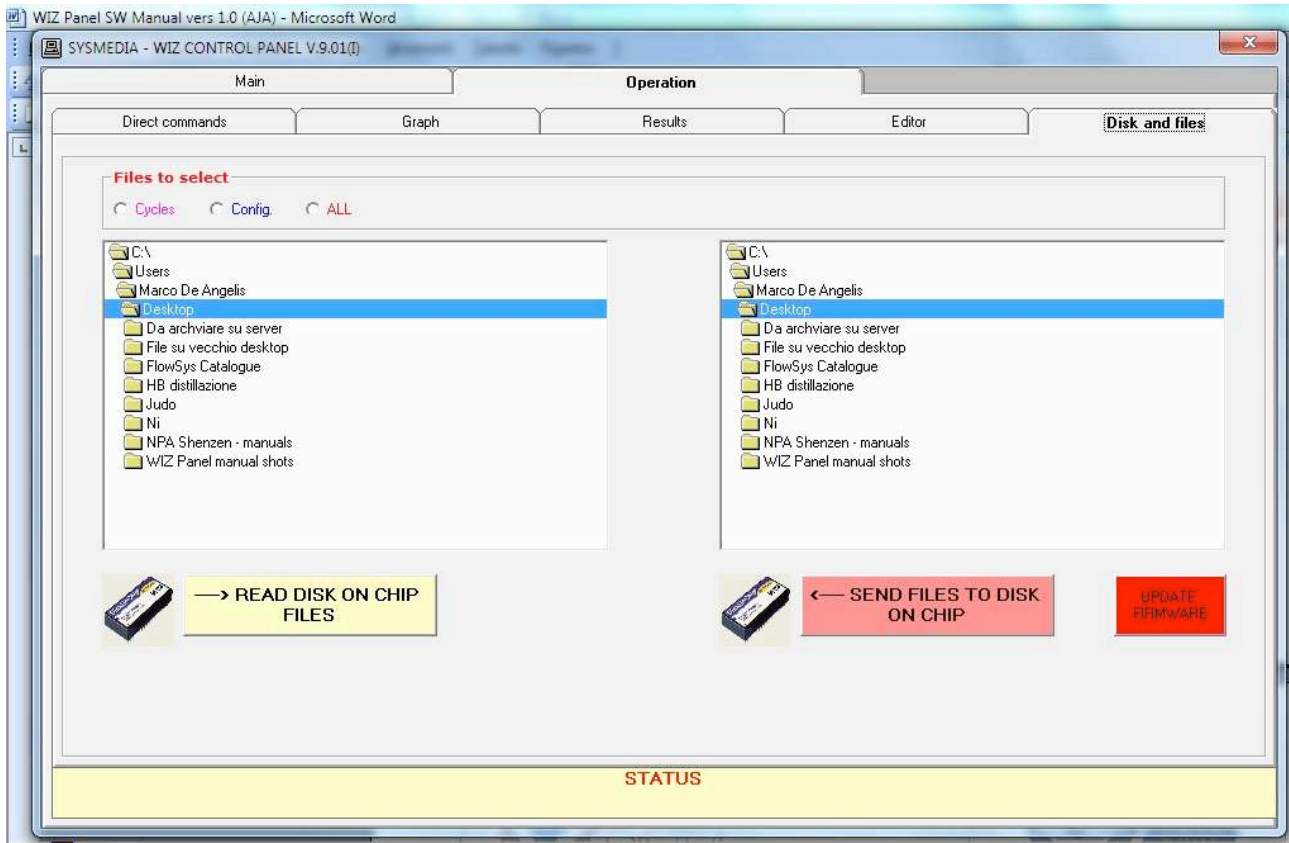
Allows to download Cycles, Configuration file and the EXE file from the Disk On Chip.

It is used mainly for service and upgrading purposes and use is reserved to qualified personnel trained at Systea factory

Note
***Improper use of Send file option or update option could create severe problems on unit operations**.*

4.4 Read Disk On Chip files

To read files from the probe memory use following procedure:
1) Create a folder on C:\; (example C:\Probe_Download)
2) Establish a connection
3) Move to Disk and Files menu
4) Select the file type to be read and downloaded to PC, **Cycles** file download only all the methods cycle, **Config**uration file download only the *.dat, *.meth and other miscellaneous file, **All** download all the file including the MAC.exe.
5) Select the folder created on C:\ for file saving; (ex. C:\ Probe_Download)
6) Click on Read Disk On Chip files

Note
1) **Downloading procedure is quite slow it will take from 5 minutes for a simple download to 20 minutes for a complete download**
2) **Before go on with any modification and Upload, be sure to create a copy of all the downloaded file.**

4.4.1.1 Send files to Disk on chip

Present procedure allows to upload all files except the MAC.exe that has to be uploaded by the **Update Firmware** option

Note

To decrease the Uploading time that is even longer than the downloading time it is suggested to save the modified file in a new folder under C:\; ex. C:\Probe_Upload. It will allow to send to Disk On Chip only the modified cycles, thus a limited number of files.

To Send files to Disk on chip use following procedure:
1) Create a folder on C:\; (ex. C:\Probe_Upload), where are saved only the file that have been modified or that have to be upload to replace any existing file
2) Establish a connection
3) Move to Disk and File menu
4) Select the folder created on C:\ containing all file to be uploaded ;(ex. C:\ Probe_Upload)
5) Click on Send file to Disk On Chip

Note:

Uploading will irremediably overwrite all file having the same name, be sure to have a backup before going on with file upload.

4.4.1.2 Firmware update

The present procedure allows to update the firmware correctly, please use following steps to go on:

1) Create e folder on C:\; (ex. C:\Probe_Firmware_upload), where the Mac.exe file is saved
2) Start the program and establish the connection
3) Move to Disk and File menu
4) Select the folder created on C:\ containing the MAC.exe ; (ex. C:\Probe_Firmware_upload)
5) Click on Update Firmware red button