EWMPC/20

Software manual

Duplomatic Oleodinamica Spa

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GENERAL INFO

This is the ***software manual* of EWMPC/20 software**. It displays information for installation, settings and use of the software EWMPC/20 version 3.6.

For earlier versions please refer to EWMPC/10 software pack.

EWMPC/20 software is a graphical interface for the digital communication and parameterization of EWM digital control cards.

The software is full of advanced diagnostic programs and oscilloscope with measure functions. It allows the parameters to be saved and imported as needed for fast card replacement and to reduce the start-up time of a system.

The software is suitable for:

digital cards EWM series 20 with USB interface port

Should you have any questions concerning just the software, please contact Duplomatic Oleodinamica S.p.A., indicating the software name and version, and a brief description of the system / application.

Other documents to be consulted for complete information are:

Start-up manual of the card

Technical catalogue of the card

Before installation read this file and follow strictly what is indicated.

Duplomatic Oleodinamica disclaims any liability for damage to person or property resulting from noncompliance of rules and instructions here declared, from misuse or incorrect use of this software pack.

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SYSTEM REQUIREMENTS & SETTINGS:

The EWMPC/20 program can run on all Windows computers with OS Windows 7 or later versions.

Installation

The installation pack includes both software and driver for the USB communication.

Install the program EWMPC/20 in your Personal Computer:

- Open program folder and select the setup icon to start auto installation
- Follow the guided procedure to complete the installation
- After successful installation of the “program and drivers”, an icon will appear on your desktop.

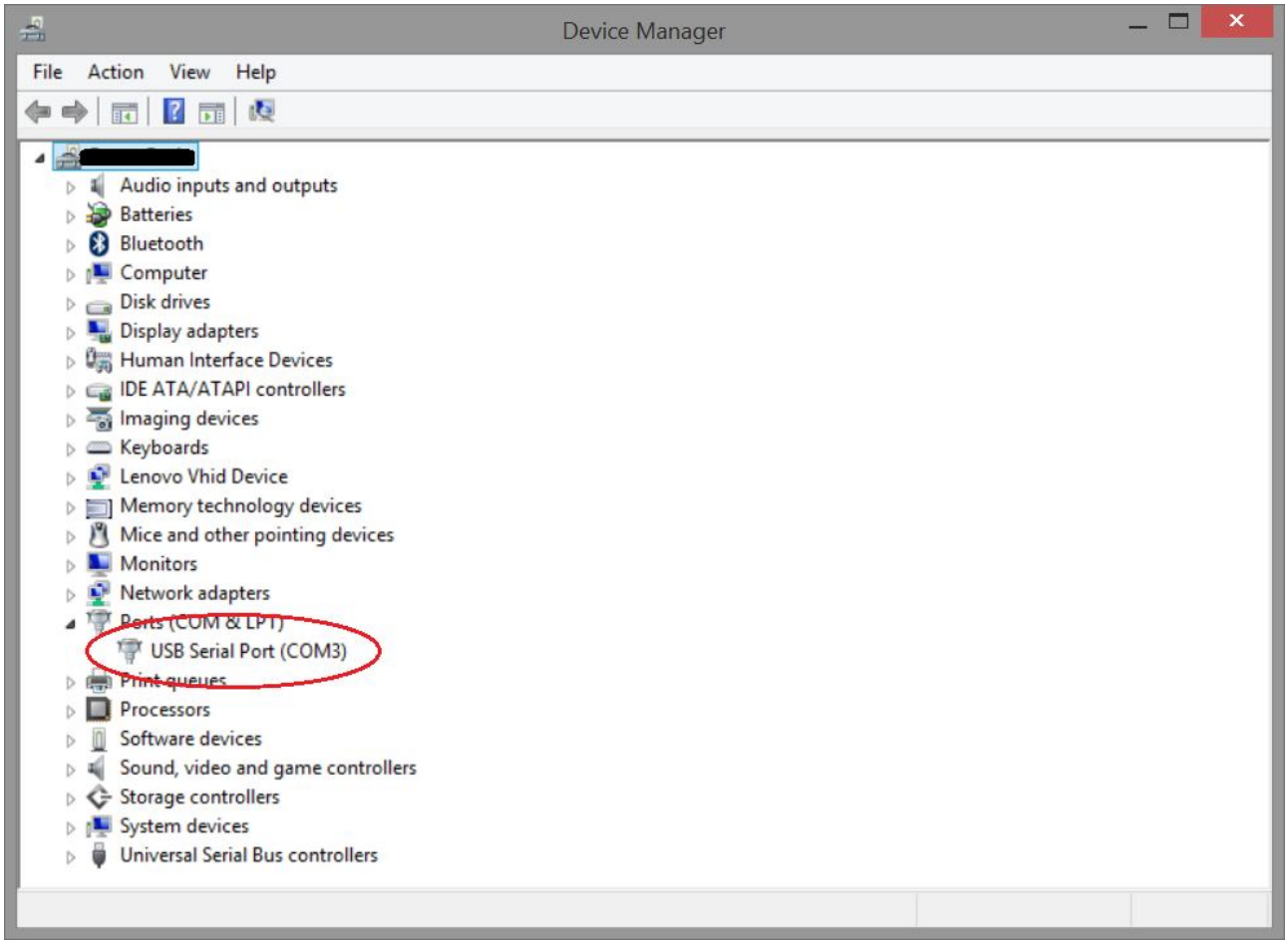
Setting the windows latency timer

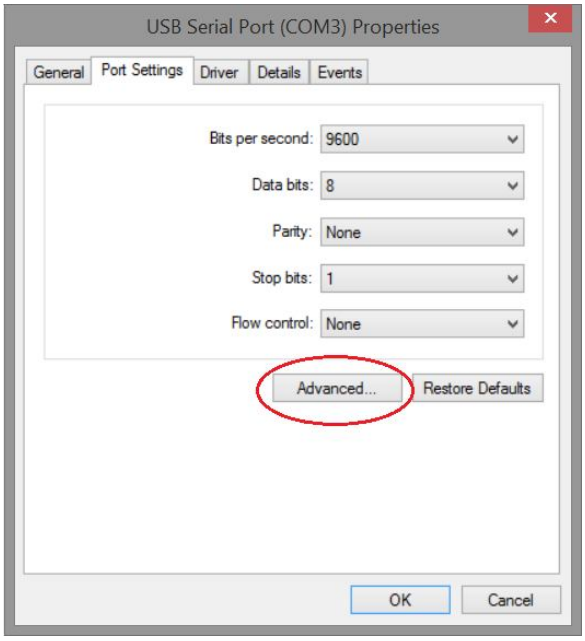
To optimize the use of some functions, for example the oscilloscope, the interface latency time should be set to the smallest value possible. Ideally the time should be one millisecond (ms).

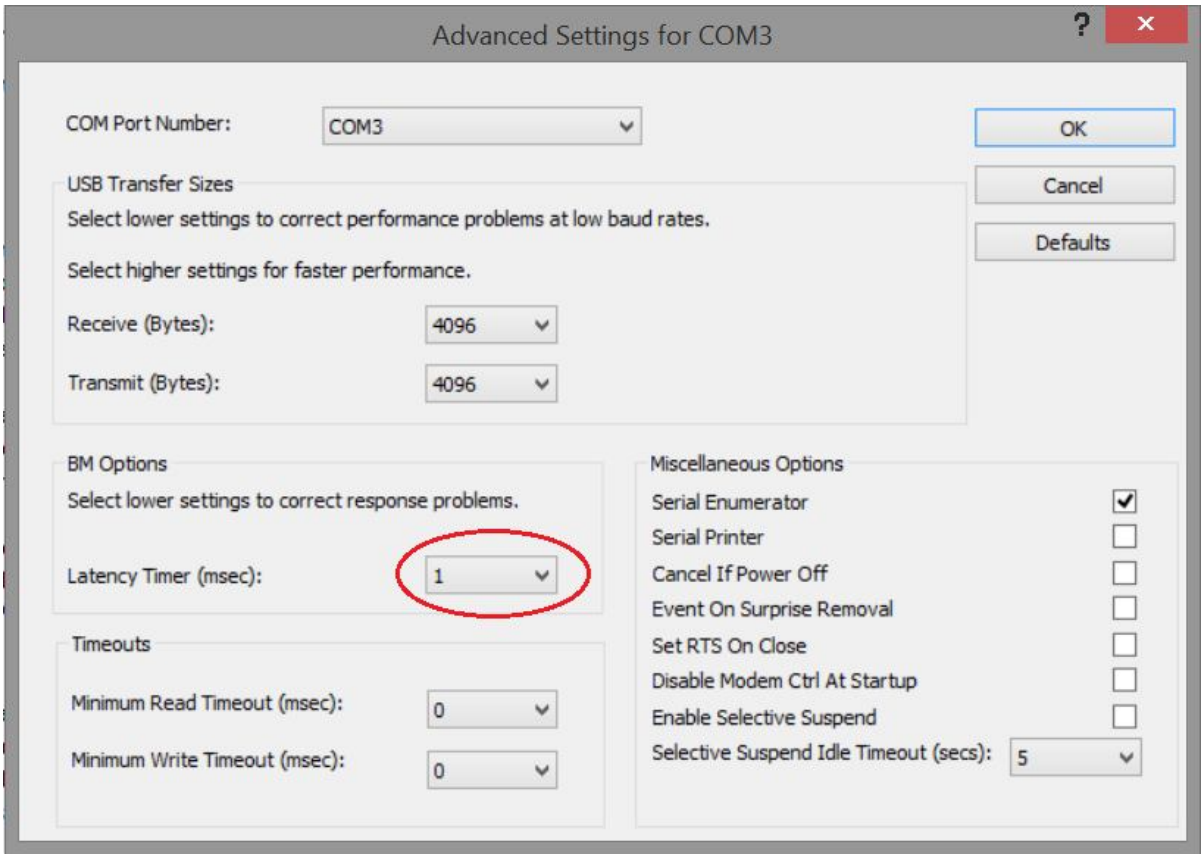
The USB interface transmits the data in blocks in the set time interval. If this time interval is larger than the oscilloscope's current sampling time, faultless operation is impossible.

The time is set in the Device manager in the Windows Control Panel.

Caution! Be careful and select the right interface.




USB Serial Port (COM3) Properties
General
Port Settings
Driver
Details
Events
Bits per second: 9600
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None
Advanced...
Restore Defaults
OK
Cancel

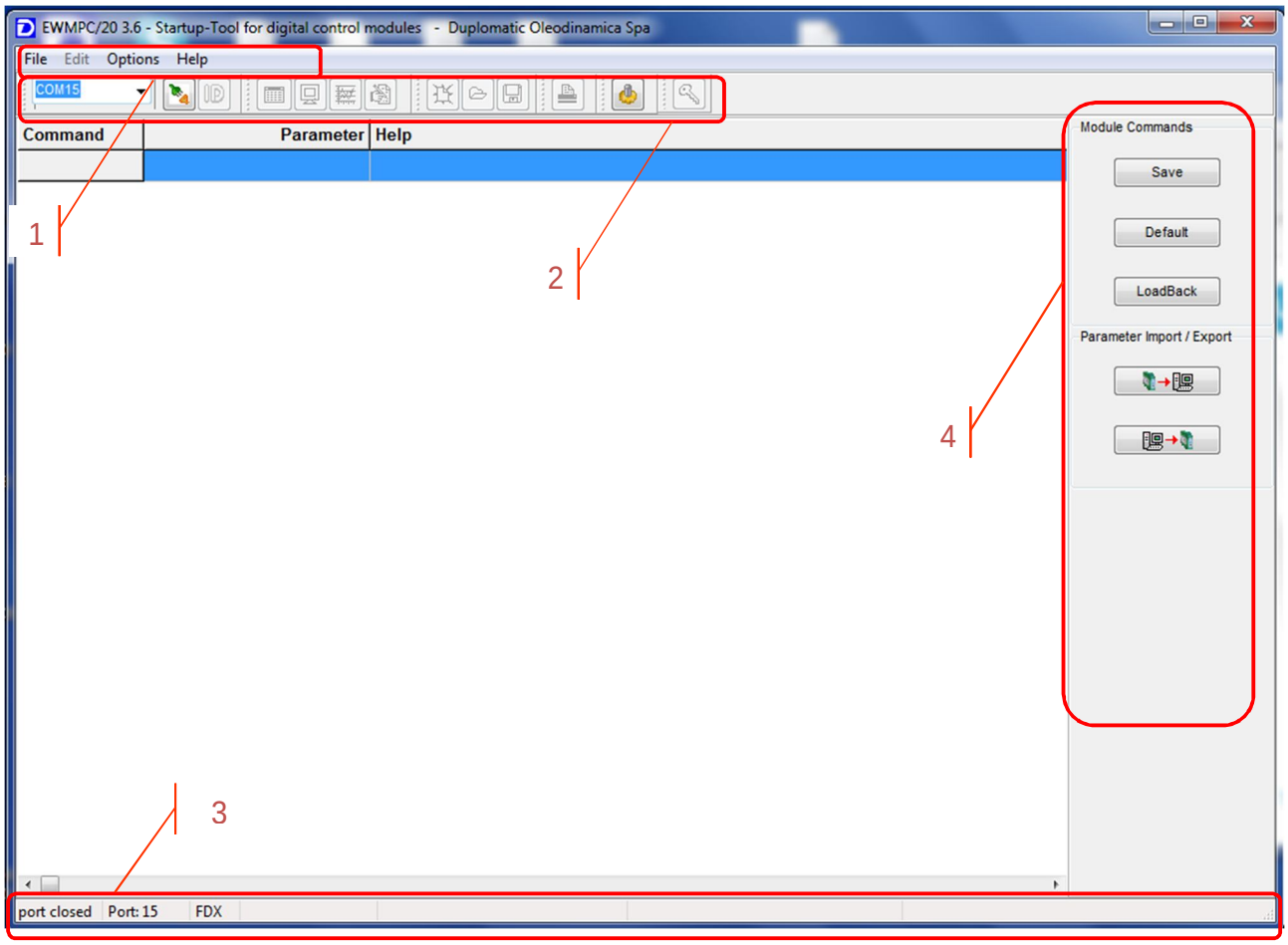

Advanced Settings for COM3
COM Port Number: COM3
OK
Cancel
Defaults
USB Transfer Sizes
Select lower settings to correct performance problems at low baud rates.
Select higher settings for faster performance.
Receive (Bytes): 4096
Transmit (Bytes): 4096
BM Options
Select lower settings to correct response problems.
Latency Timer (msec): 1
Timeouts
Minimum Read Timeout (msec): 0
Minimum Write Timeout (msec): 0
Miscellaneous Options
Serial Enumerator
Serial Printer
Cancel If Power Off
Event On Surprise Removal
Set RTS On Close
Disable Modem Ctrl At Startup
Enable Selective Suspend
Selective Suspend Idle Timeout (secs): 5

USER INTERFACE

At the end of the setup procedure the software can be executed using the proper desktop icon

Launch the program, and the workspace appears.

This is the first screen:



Control bar [1]

File : Use this menu to Load or Save offline set of parameters and for usual “File” operations.
Options: To change settings
Help: Software information and Instruction Manual

Tool bar [2]

Tool bar shows icons grouped for functions:
Communication, Software Functions, File Options and Settings.
Tooltip help the user to identify different actions.

In *Communication* section:

The proper Communication port can be selected

the communication can be established
NOTE: Remember to disconnect the software before switching off a module.

Identification of the model of EWM card and reading of all the parameters

The main panel shows the parameters. There are also other *Functions* implemented on EWMPC that are selectable using the icons in the tool bar:

Parameter list

Monitor (page 13)

Oscilloscope (page 15)

Terminal (page 18)

Status bar [3]

In the status bar useful information can be read:

- Status of the communication
- Settings used for the communication
- Model of card identified

Right panel functions [4]

SAVE: the date are stored in the EEPROM of the module permanently.

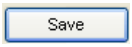
DEFAULT: the set in factory is activated again.

LOADBACK: the last stored dates are back read.

UPLOAD and DOWNLOAD PARAMETERS:

UPLOAD icon will save all parameters (stored into the card) into the PC.

DOWNLOAD icon will send the parameters to the card

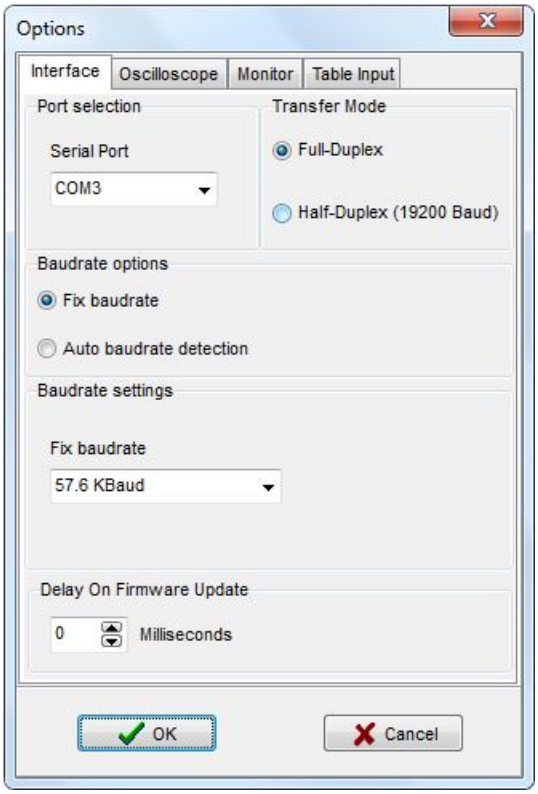
ATTENTION: Parameters are not stored into the memory so in case you do not save 

the parameters they will be lost when connection is closed.

HOW TO START

Communication settings

Click on “settings” icon



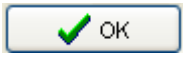
Select the right port (COM1, COM2, COM3, COM**)

Select TRANSFER MODE

TRANSFER MODE:

Full-Duplex, for EWM cards

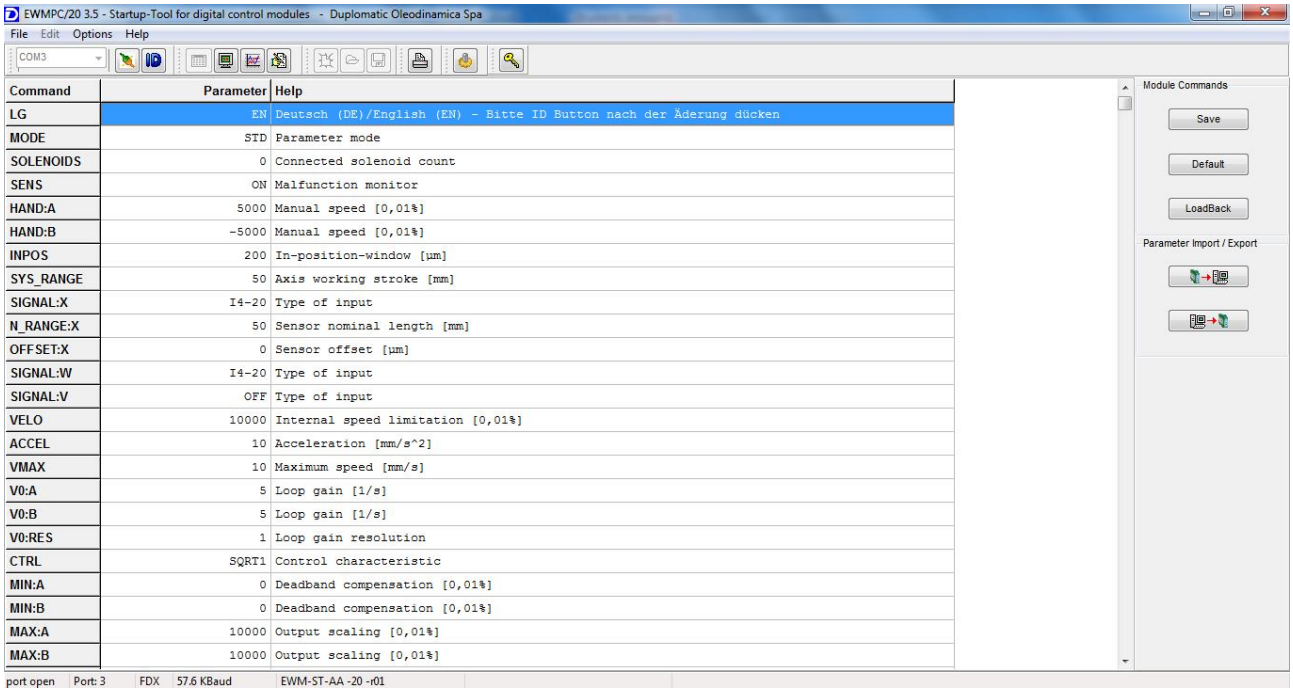
Half-Duplex (19200 Baud), for proportional valves

Confirm settings by click on 

Link the module

Press the button CONNECT to start the communication.

Press Search Module (Identify) to run the application that will recognize the EWM card linked to the PC.



Command	Parameter	Help
LG	EN	Deutsch (DE)/English (EN) - Bitte ID Button nach der Äderung dücken
MODE	STD	Parameter mode
SOLENOIDS	0	Connected solenoid count
SENS	ON	Malfunction monitor
HAND:A	5000	Manual speed [0,01%]
HAND:B	-5000	Manual speed [0,01%]
INPOS	200	In-position-window [µm]
SYS_RANGE	50	Axis working stroke [mm]
SIGNAL:X	I4-20	Type of input
N_RANGE:X	50	Sensor nominal length [mm]
OFFSET:X	0	Sensor offset [µm]
SIGNAL:W	I4-20	Type of input
SIGNAL:V	OFF	Type of input
VELO	10000	Internal speed limitation [0,01%]
ACCEL	10	Acceleration [mm/s^2]
VMAX	10	Maximum speed [mm/s]
V0:A	5	Loop gain [1/s]
V0:B	5	Loop gain [1/s]
V0:RES	1	Loop gain resolution
CTRL	SQRT1	Control characteristic
MIN:A	0	Deadband compensation [0,01%]
MIN:B	0	Deadband compensation [0,01%]
MAX:A	10000	Output scaling [0,01%]
MAX:B	10000	Output scaling [0,01%]

After the start screen, the software is ready and you may change the parameters.

(Parameters are related to the type of EWM card that has been connected)

SOFTWARE FUNCTIONS

General parameters

Parameters showed by the EWMPC depend on the card type connected and are described in detail in related start-up manual..
Below you can find the description of general parameters used for all the modules.

LG

This command defines the language of text parameters. Deutsch (DE) / English (GB)

After changing the language setting the ID button in the menu bar must be pressed to see the modification.

MODE (Input MODE parameter)

This command defines the level of setting parameters. STANDARD / EXPERT mode

SENS (sensor monitoring)

Command	Parameters	Unit	Group
SENS x	x= ON|OFF|AUTO	-	STD

Activation of the sensor and internal failure monitoring.

ON: All monitoring functions are active. Detected failures can be reset by deactivating the ENABLE input.

OFF: No monitoring function is active.

AUTO: Auto reset mode. All monitoring functions are active. If the failure does not exist anymore, the module automatically resumes to work.

SIGNAL (type of input)

This command can be used to change the type of input signal, voltages (U) or current (I) and to define the polarity of the signal. This command is used to configure the analogue input, if it is available for the module connected.

Also the type of parameters depends on the module connected

Command	Parameter	Unit	Group
SIGNAL:i x	x= OFF U0-10 U10-0 I4-20 I20-4	-	EASY

Monitor Tool

Click to start MONITOR function.

With the monitor function the individual process data can be observed.

Process Parameter panel

The process parameter panel shows the current process data and where they can be measured.

This panel can be customized from the user, clicking on the *Settings* icon. In the monitor palette, you can set the number of the parameters to be shown.
User can change the number of parameters displayed using Setting windows:
user can choose between the standard view (4 parameters), custom (up to 10) and maximum (all parameters).

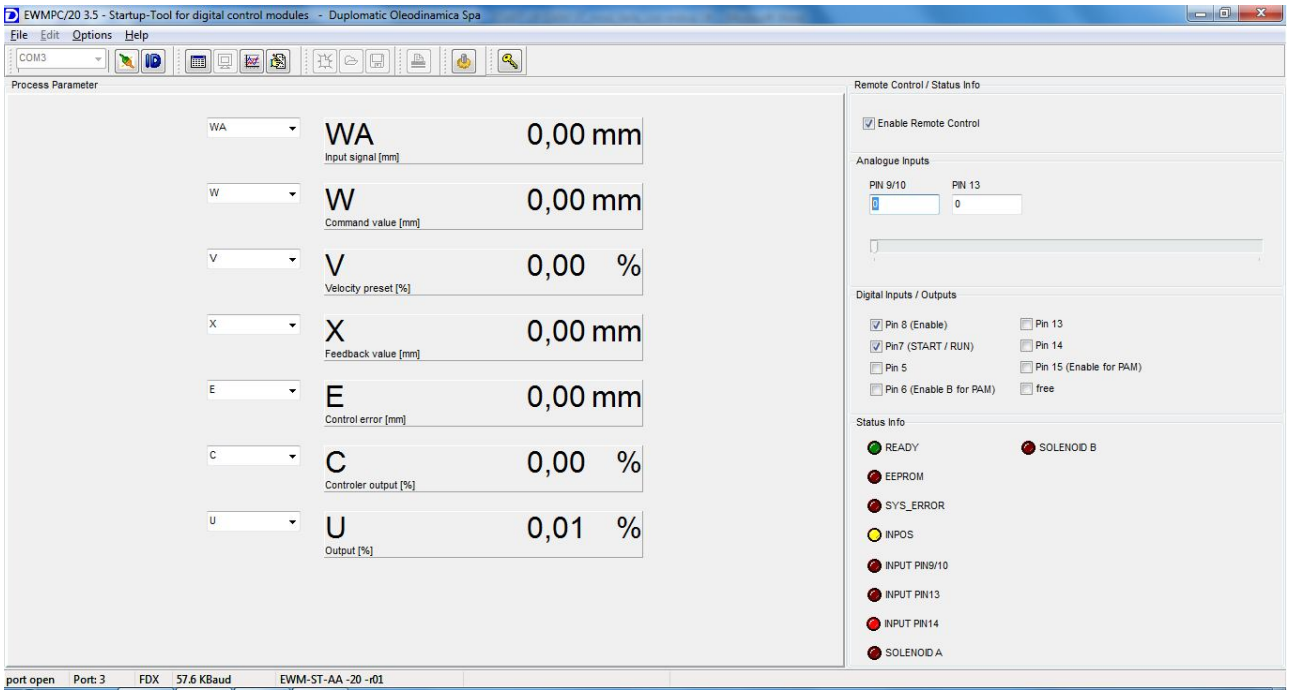
Then choose the parameter to be monitored in the dropdown list.

Process data are values which are necessary for open or closed loop control.
The most important process data are the demand value (w), the actual value (x) and the output variable (u).

The current process data and where they can be measured in the module, can be seen in the different block diagrams. With “options” the selection can be changed and / or the module set-up can be loaded.

The selection of the process data can be carried out with OPTIONS / SETUP.

The process data are represented continuously.



There will be no indication if process data chosen are not available in the module.

Remote control/Status Info panel

This tool offers other useful additional features that allow easy control during start-up and diagnosis. They are located in the *Remote control/Status Info* panels on the right half of the window. They are:

Enable/Stop Remote Control checkbox
Analogue Inputs
Digital inputs / Outputs
Status Info

Analogue Inputs

The respective operating components (input fields) are labeled with the appropriate terminal names of the module so the input can be easily identified by looking at the block diagram.

To change a value, double-click with the right mouse button on the field or click in the field and then press the *ENTER* key.

When activated, the box changes color and the text turns red. The slider below becomes active.

Now the changes can be made either by direct numeric input or via the slider.

Caution! Direct numeric input only becomes effective after the *ENTER* key is pressed a second time.

This deactivates the input field again. On the other hand, changes made with the slider take effect immediately.

Input is completed when another input component receives the focus or the ENTER key is pressed again in the active input field.

Digital Input and Output

The status of the digital inputs/outputs can be modified only if the remote control function is enabled.

The names of the inputs/outputs are referred to the module's terminals.

Although they are displayed, not all inputs/outputs are actually present on the card: this is necessary for reasons of downward compatibility of the software with other module models.

The specific configuration of the terminals can be inferred from the module's block diagram.

Status Info

Status information are displayed in the lower area of the window, like light-emitting diodes (LEDs).

The LEDs are divided into three different categories.

The green LEDs signal stand-by messages, the yellow ones give status information and the red ones display error messages.

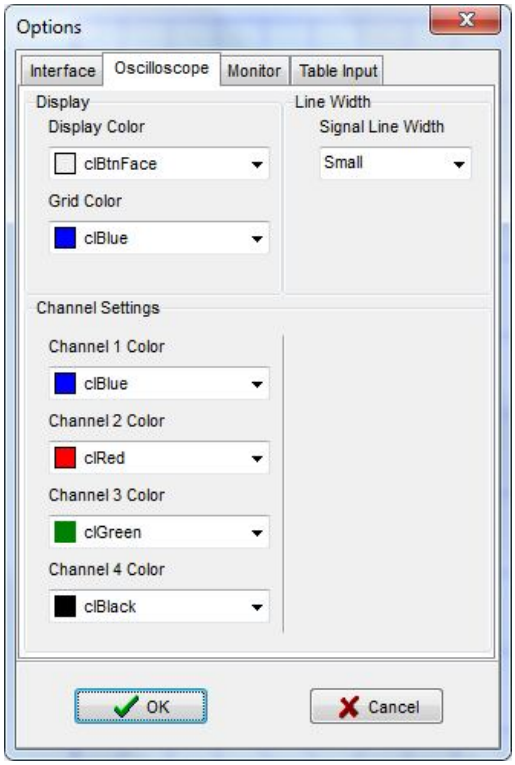
As additional assistance, a small yellow help text label appears when the mouse is moved over an LED or its name.

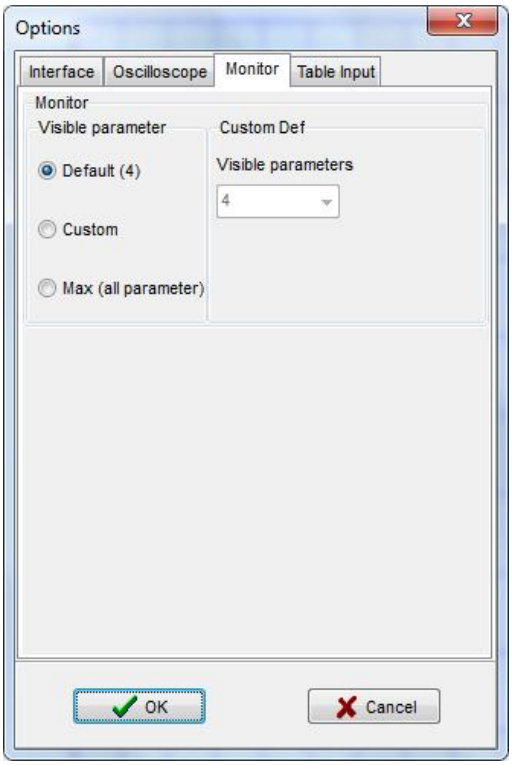
Oscilloscope Tool

To start the Oscilloscope tool push the Oscilloscope button.

The setting options for the oscilloscope are limited to various color settings and line width for the signal curves (channels).

Unlike the color settings, the line width applies to all channels at the same time.

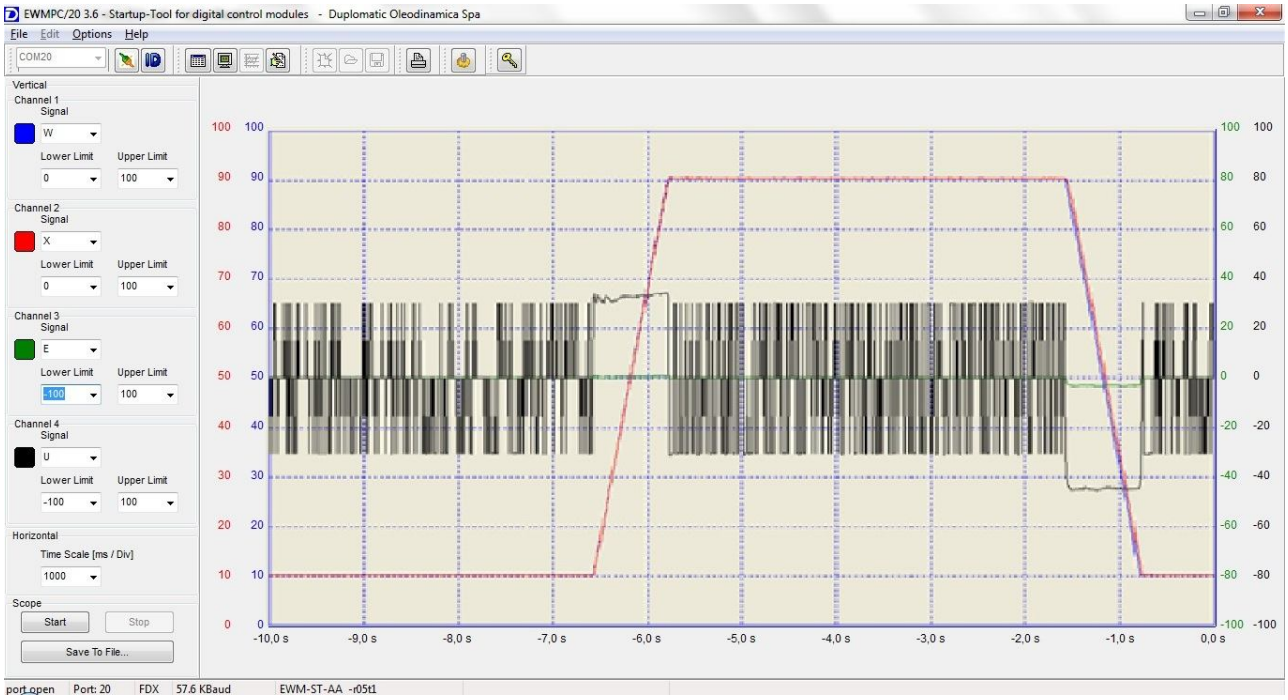




The oscilloscope enables the assessment of the different process variables.

The selection of the process variables is just the same as for the MONITOR tool.

Up to four signals can be displayed simultaneously.



Channel panel

The left panel shows the channels settings:

UPPER LIMIT and LOWER LIMIT

With these two values the vertical scaling of each channel can be set.
Obviously, the upper limit must be greater than lower limit.

TIME SCALE

Here the full time period of the indicated curve can be set.

With **START** and **STOP** buttons the data recording can be controlled.

SAVE TO FILE

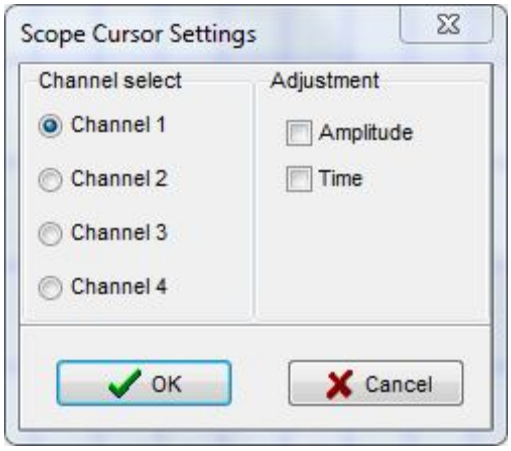
To log the readings of the channel activated, press “SAVE TO FILE” button and select an existing txt file. When the acquisition is launched through the Start Button, the software saves the reading in the log file selected.

By this way to append more than an acquisition session in the same file is also possible.

Diagram window

The oscilloscope works in the roll / scroll mode so the diagram is always updated at the last seconds.
A sampling rate of up to 10ms can be achieved depending from the module model and the baud rate set.

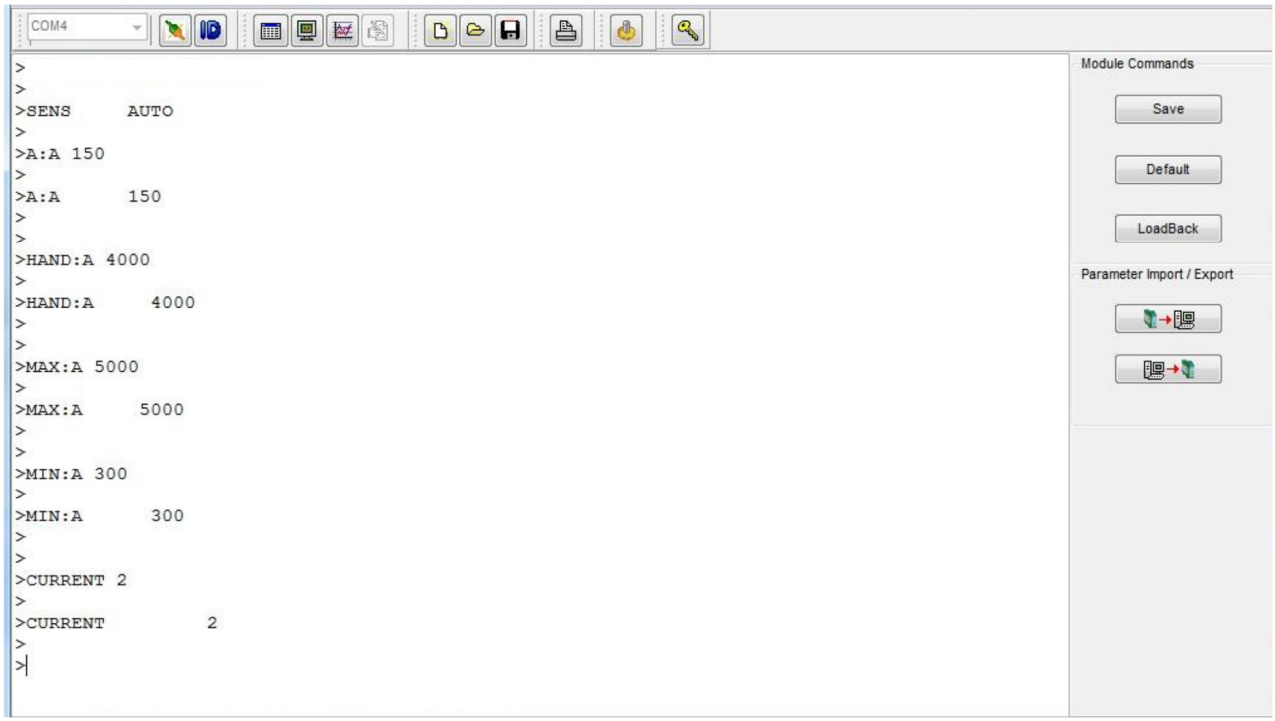
The screen oscilloscope in the EWMPC/20 software has a feature that permits to measure individual signal both horizontally and vertically, using four guides that you can place with drag and drop. The measurement info are displayed in the status bar.
To activate the guides, right-click on the grid area and select *Scope cursor setting* from the context menu that will appear.
A pop-up dialog box permits to choose the channel and the type of measurement (time,amplitude or both).



It's possible to capture the oscilloscope screen to the clipboard for further editing.
To capture the grid area, right-click on the grid area and select *Copy Scope Display* from the context menu that will appear.
It's also possible to print the oscilloscope view for documentation purposes.
The cursor coordinates, a key to the channels and the scale values are also printed together with the chart.
Click on the print button in the main bar to start printing.

Terminal Window

Use terminal window to display or modify parameters using command lines.



Type the name of the parameter and press enter to display the value of the parameter.

Type the name of the parameter followed by the value to assign to modify the current setting.

APPENDIX: MATH and EASY mode

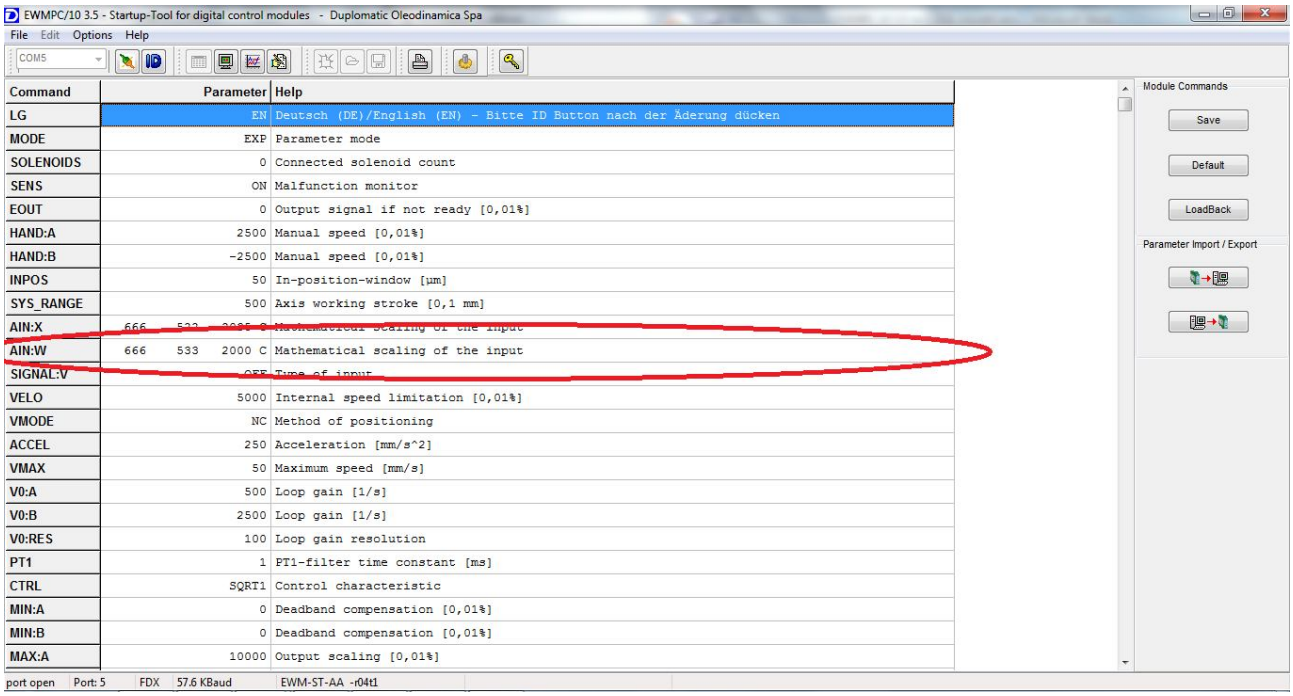
With the advent of series 20 a new management of analogue signal settings is introduced. The previous scaling method is still available by changing the proper parameter through the Terminal window.

Using the following two lines of code the software will switch between 'Easy' mode and 'Math' mode, respectively:

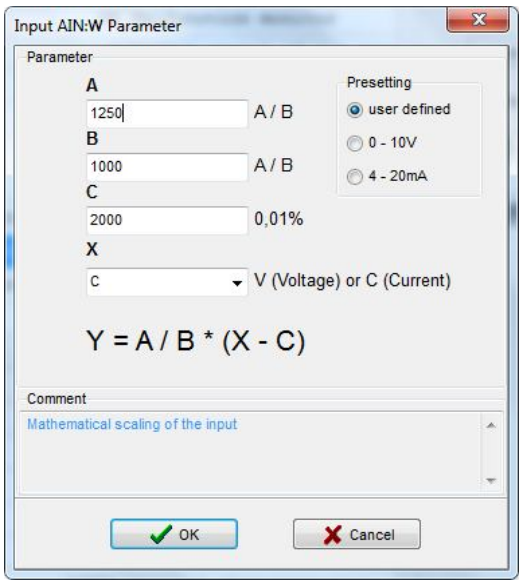
AINMODE EASY

AINMODE MATH

In MATH mode the analogue signal parameters will be displayed in a different way:



Input signal (AINMODE MATH):



USER DEFINED:

Command	Parameters	Unit	Group
AIN:i **A** **B** **C** **X**	 **a= -10000… 10000** **b= -10000… 10000** **c= -10000… 10000** **x= V|C**	 **-** **-** **0,01 %** **-**	**MATH**

With this command each input can be scaled individually. For the scaling function the following linear equation is taken.

$$y = \frac{a}{b} \cdot (x - c)$$

x is the input signal and ***y*** is the output signal.

At first, the offset (*c*) will be subtracted (in 0,01% units) from the input signal, then the signal will be multiplied with factor *a / b*. With these both factors every floating-point value can be simulated (for example: 1.345 = 1345 / 1000).

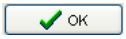
With the *x* parameter value the internal measuring resistance for the current measuring (4... 20 mA) will be activated (*V* for voltages input and *C* for current input).

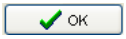
	AIN:xx	a	b	c	x
i with voltage (V):	AIN:i	1000	1000	0	V
i with current (C):	AIN:i	1250	1000	2000	C

Reverse acting sensor works from 10 V to 0 V.

	AIN:xx	a	b	c	x
i with voltage (V):	AIN:I	-1000	1000	10000	V

0...10V

To set this input select from right selection menu “presetting” 0...10V then click 

4...20mA

To set this input select from right selection menu “presetting” 4...20mA then click