# Digital scope software

# WEG\_SoftScope 3

User manual

Language: English





## Product and Configurator compatibility

ADP200	WEG_SoftScope 3	WEG_eXpress	Catalog
FW: 4.1.4 or later		Ver 100 er leter	
FW V 4.1.4 PID_IMM 3.x.37.5 or later	version: 3.1.4.0	ver. 1.0.0 or later	ver. 1.0.0 of later

ADV200-HC	WEG_SoftScope 3	WEG_eXpress	Catalog		
FW: 7.7.20 HC 4.x.3.0 or later	Version: 3.1.4.0	Ver. 1.0.0 or later	Ver. 1.0.0 or later		

ADV200	WEG_SoftScope 3	WEG_eXpress	Catalog		
FW: 7.7.20 or later	Version: 3.1.4.0	Ver. 1.0.0 or later	Ver. 1.0.0 or later		

ADV200 LC	WEG_SoftScope 3	WEG_eXpress	Catalog
FW: 7.7.20 or later	Version: 3.1.4.0	Ver. 1.0.0 or later	Ver. 1.0.0 or later

TPD32-EV	WEG_SoftScope 3	WEG_eXpress	Catalog		
FW: 11.02 or later	Version: 3.1.4.0	Ver. 1.0.0 or later	Ver. 1.0.0 or later		

TPD32-EV	WEG_SoftScope 3	WEG_eXpress	Catalog		
FW: 11.26/27 or later	Version: 3.1.4.0	Ver. 1.0.0 or later	Ver. 1.0.0 or later		

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Thank you for choosing this WEG product.

Please send any feedback you may have that would help us to improve this manual to the following e-mail address: techdoc@weg.net. We would be happy to receive it.

Before using the product, read the safety instruction section carefully.

Keep the manual in a safe place and available to engineering and installation personnel during the product functioning period.

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# 1. Introduction

This document is a basic guide to introduce, install and use the new WEG\_SoftScope 3 tool.



ope is a digital scope software designed to sample and display in real time drives parameter variables, and it is particularly useful during drive test and commissioning. SotfScope can guarantee synchronization of samples with a sampling time that depend on the target (eg. 1mSec).

**WEG\_SoftScope 3** is the evolution of the traditional SoftScope (SoftScope 2) used before either with the basic software (Factory Sw) and also with MDPLC applications and developed for the most important WEG Automation Europe Family.

**WEG\_SoftScope 3** add many new features and significantly improves the functionality of the previous SoftScope 2.

The completely new graphics and the full integration with the WEG\_eXpress, make the use of WEG\_SoftScope 3 very easy and simple to install and use also with MDPLC applications.

The parameters list that can be monitored are included in the WEG\_eXpress tools and selected directly with the acquisition command of the program.

# 2. SoftScope operation principle

SoftScope is intended to sample the value of a list of parameters (signals) within the target and to acquire the corresponding value for a given time (acquisition time).

By selecting the acquisition devices from the WEG device catalog, related to the Firmware version and application loaded into the Drive, the user gives SoftScope the information required to detect the available software signal values. Later, it will be possible to select the signals to be sampled during the acquisition phase and to define a trigger that, together with a given signal value and slope, will start the preset acquisition.

It is important to note that, during the acquisition phase, all signals to be sampled are first acquired in a specific storage area within the drive ("Runtime Acquisition System"); when the acquisition is complete, all the sampled values are sent to SoftScope to be displayed. In this way, acquisition performance and consistency are ensured, thus avoiding problems due to serial communication delays.

A diagram with the operation principle is given below:



# 3. WEG\_SoftScope 3 Main Features

WEG\_SoftScope 3 is the new scope program used with WEG Automation Europe products.

The new tool WEG\_SoftScope 3 will replace the previous SoftScope 2.

The use of the new WEG\_SoftScope 3 involves the release of a new software version of the target. This means for example that for ADV200 WEG\_SoftScope 3 can be used from Fw V7.7.20 or more.

Here some important information of the new scope:

- Acquisition saved with SoftScope 2 are not managed by the new WEG\_SoftScope 3.
- Drive Fw compatible with WEG\_SoftScope 3 are not compatible with SoftScope 2.
- Is not possible connect WEG\_SoftScope 3 to a target without "SoftScope3 Runtime Extension".
- WEG\_SoftScope 3 is installed in the directory WEG PC Tools at the same level of current WEG\_eXpress and use the same Catalog to manage targets.

#### WEG\_SoftScope 3 features:

- Acquisition up to 20 tracks. The number of tracks depends on the target (eg. For ADP200 is 20 tracks)
- Sample rate with Time prescaler. The min sample rate value depends on the target (eg. For ADP200 is 1mSec)
- Inserting Tracks to scope via Drag & Drop from WEG\_eXpress parameters
- Integrated visualization of the target "Parameters", showing all of the target parameters grouped by menu like WEG\_eXpress
- Automatic capture mode (without trigger) or normal (with triggers), with manual override trigger command
- Acquisition Mode single or continuous
- Load another acquisition as "offline traces" as reference background with the time shift option
- Possibility to start acquisition, close the SoftScope and reconnect later to download the result (same file .SSX)
- Possibility to re-download the latest completed acquisition (with the same .SSX file)
- Change the color of the tracks
- Multi-Language, for target that support Multi-Language (like WEG\_eXpress)
- Integrated visualization to the "PLC Symbols", showing all global variables, targets variables/parameter, local variables of the PLC project currently running on the target.
- Configurable Time prescaler for scaling acquisition period
- Configurable trigger rising/falling and threshold value with pre-trigger time.

## 4. Installing the SoftScope3 tool

This part contains the procedure to install WEG\_SoftScope 3 program.

#### 4.1 System Requirement

Minimum System Requirement are the same of WEG\_eXpress:

- Windows XP (SP3)
- 512 MB RAM
- 1 GB hard disk (for Catalog)
- Internet Explorer 7

#### 4.2 Program Requirement

<u>Before WEG\_SoftScope 3 installation it's necessary install the standard WEG\_eXpress program and related</u> <u>Catalog. Downloading the setup file from WEG Web:</u> <u>https://www.weg.net/catalog/weg/IT/en/p/MKT\_WDC\_GLOBAL\_PRODUCT\_INVERTER\_ADV200.</u>

Minimum Requirement are:

- WEG\_eXpress Ver 1.0.0 or later
- Catalog Ver 1.0.0 or later

#### 4.3 Pc Communication

Pc connection with the drive are the same used with WEG\_eXpress. You can find the PC communication information in the drive Quick Startup Manual.

## 4.4 WEG\_SoftScope 3 Installation

WEG\_SoftScope 3 can be installed on the computer by means of the setup program. Run the "**SoftScope\_3.1.4.0.exe**" program and follow the wizard procedure. Close all the Windows programs before running this Setup program. The windows displayed during the installation procedure are shown below:



Follow the installation procedure after some steps you can see the following screen:



The program will be installed in the same destination of WEG\_eXpress. Pressing "Install", the installation start.

谩 Setup - WEG_SoftScope3	_		×
Installing Please wait while Setup installs WEG_SoftScope3 on your computer.		¢	
Extracting files C:\\WEG_eXpress\WEG_SoftScope3\templates\img\modeforcetrg. 	bmp		
		Can	icel

If the installation finish without any error then the following window appears else see Appendix B of this manual for the complete description of all installation steps.

🛃 Setup - WEG_SoftScope3	- 🗆 ×
	Completing the WEG_SoftScope3 on your computer. The application may be launched by selecting the installed shortcuts. Click Finish to exit Setup. ☑ Launch WEG_SoftScope3
	Finish

If you press Finish exit Setup and Launch WEG\_SoftScope 3.

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The installation is completed successful.

# 5. Using WEG\_SoftScope 3 Tool

Once WEG\_SoftScope 3 is installed in your computer you can open the tools. Now select *"New acquisition"* to choose the target for acquisition.

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		ADV200	7.x.20 PID_IMM 2.x.37.0		AC Inverter Drives	
		ADV200	7.x.20 PID 2.x.1.0		AC Inverter Drives	
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If you select for example "ADV200 7.x.20" the following windows appear:

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The main SoftScope screen is as follows:



Note that in this example the target selection is : "ADV200\_7.x.20". The parameter area layout can change if you select a different target.

Menu:	WEG_SoftScope 3 menu.
Toolbar:	fast access to the commands included in the menù area. Include the most frequently used controls.
Display Area:	area where the waveforms of the sampled signal values are displayed.
Display Sliding Bar:	sliding bar of the "Display Area", useful when signals are zoomed.
Signals List – Measures:	list of sampled signals, signal measurements and signal value corresponding to measurement cursor.
Parameter Area:	showing all of the target parameters grouped by menu like WEG_eXpress (target dependent).
Setting Area:	show the target settings information. The information of this area depends on the target. Acquisition Status: status of the acquisition.
Output Window:	The output window shows all the messages of the program.

Once the WEG\_SoftScope 3 is installed on the computer, can be connected to the computer serial port with the same serial connection used for WEG\_eXpress.

#### 5.1 Parameters Area

The Parameter area allow to select standard parameter/variables and also "PLC Symbols", showing all global variables, targets variables/parameter, local variables of the PLC project currently running on the target. If you select for example the target "*ADV200 7.x.20*", the **Parameter Area** showing all of the target parameters grouped by menu like WEG\_eXpress.



If the target is an MDPLC application, the "**PLC Symbols**" area shows all project variables/ parameter and also local or global variables of the selected PLC project.

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If the selected target is not a MDPLC application no PLC symbols are "no PLC project".

#### 5.2 Connect With the device

The serial line connection between WEG\_SoftScope 3 and the target is the same of WEG\_eXpress. If for example the target is "*ADV200 7.x.20*", connect the cable and press the button "Connect":







In case of error the message is:

Output								ąΧ
Connection	error	due	to	incorrect	communication	parameters:	: Modbus:1,1000,M#COM:1,38400,N,8,1,H	

In this case check the serial connection and the communication settings according to the target and to the com port of PC:



## 5.3 Adding Signals to the Oscilloscope

In order to plot the evolution of the value of a parameter / variable, you need to add it to the Oscilloscope.

With WEG\_SoftScope 3 is possible to inserting the Tracks via Drag & Drop from the WEG\_SoftScope 3 Parameter area:



Drag & Drop is possible also with WEG\_eXpress:

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Insert all the tracks necessary for the acquisition.

## 5.4 Acquisition Settings

After the tracks selection need to set the acquisition settings:



In "**Sample time Base (mS)**" and "**Time prescaler**", the signal sampling time is set in the drive, i.e. the time between two subsequent acquisitions of a signal value. The field with grey background are read only. The minimum sampling time depend on the target (Ex. 1 mSec for ADV200) minimum value is with **Time prescaler** = 1; in this case, the acquisition will last a few seconds (it depends on the number of sampled signals and on the drive storage buffer size). If signals must be sampled for a longer period, increase the "Time prescaler" value. The right side of "Sample Time" shows the actual value used on the drive and the minimum value which can be set.

After you insert all the Tracks the maximum acquisition time is calculated by the Scope and write in "**Max Acquisition time** (mS)" then you can choose the desired acquisition time in "**Acquisition time** (mS)". As mentioned above, the time limit depends on the number of tracks and of "Time prescaler". If a value higher than the maximum one is selected, this will be automatically adjusted to the maximum value.

In the "**Trigger Source**" field (Setting window), the signal generating the acquisition trigger can be optionally set. Only one trigger signal can be selected between the selected acquisition signal.

In **"Trigger Slope**" and **"Trigger Value**", the trigger and slope values can be defined (direction of the signal value, when passing from the trigger level, which starts the acquisition).

The trigger level, is expressed in the measurement unit of the sampled signal.

**"Trigger Slope**" can be positive if trigger should occur when the slope will define whether the trigger is active on the positive or negative slope of the digital signal.

If a signal trigger is selected, the trigger level will be set; for example "motor speed" is expressed in Rpm, therefore the trigger is set to 100 for 100 Rpm. in this case, positive trigger should occur when signal passes from lower values to values higher than the trigger level; otherwise the slope will be negative.

In "**Pre-Trigger time** (ms)", the pre-trigger value is set, i.e. the time during which signals are recorded before trigger intervention. The maximum pre-trigger value corresponds to the preset acquisition time.

#### 5.5 Start Acquisition

#### Manual Acquisition:

Trigger setting is not required if the acquisition should be started manually "**Trigger Source**"  $\rightarrow$  (None) pressing the "**Run Acquisition**" Button in the Toolbar area the acquisition Start.

**Status** move from *Idle*  $\rightarrow$  *Pre-trig*  $\rightarrow$  *Triggered* the acquisition start when the Samples acquired reach the Acquisition time **Status** move to acquiring wait some time for the serial data transmission the display area show the waveform and the Status return Idle if **"single sequence capture"** or restart if **"continuous capture"**.



Press again "Run Acquisition" to stop the transfer (if necessary, the trigger must be re-armed).



#### Acquisition with Trigger:

If a trigger has been set, it should be armed. For example Select "**Single Sequence Capture**" and "Normal trigger mode ...". Now pressing "Run Acquisition" "Status" go to "Pre-trig".



As soon as the trigger signal matches the required settings, the acquisition configured signals will be stored into the Drive memory for a period corresponding to the acquisition time (unless a pre-trigger happens). When transfer is complete, data are graphically displayed within the "Display Area".

In this example, as soon as Pressure Feedback exceeds 30 Bar with a positive slope, the acquisition tracks will be stored with a 500 milliseconds pre-trigger.

In continuous capture after acquisition the status automatically return in pre-trigger waiting next trigger event.

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- Pump Direction										1			
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MULTIPUMP	Pressure Fbk	bar	0.043	64.423	0.000	8.047				Pressure P			
TUNING	Pressure Ref Mon Int	bar	4,200	30.000	4,200	3,225				Pressure R			
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In order to revoke the "Arm trigger" command, press again the "Run Acquisitions" button.

On the left side, next to the ordinate axis, the signal zero position is indicated by means of an arrow with the same colour of the corresponding signal.

The trigger position is highlighted at the top. The signal zero position can be moved upwards or downwards using the mouse. For the measurement one Horizontal and two Horizontal Cursor are available.

Using the mouse, it is possible to zoom a display area so as to better highlight parts of the waveform; to restore the original display, select the "Show All Value" button.

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	<b></b>		
	Show all values		

If the zoom function is enabled, the sliding bar below the "Display Area" allows one to scroll the waveform to observe its development during the acquisition phase.



The "Signals List", in the lower part of the window, shows the acquisition information (min/max value of waveform, colour and unit of measurement).

An important and useful function to analyse waveforms is represented by cursors, which allow measurement of the signal value at a specific position of the acquisition and detection of time differences. They can be enabled from the "Show measure bar button" menu.

Show measure bars	

The blue and red cursors move vertically, while the grey cursor moves horizontally. Through cursor movement, signal values within the measures window can be detected ("Blue cursor", "Red cursor", "Horiz cursor"); the time differences are shown in the top left part of the "Display Area" ("Time diff").



The **waveform colour**, the **scale** and the **display min/max** values can be changed using the "**View settings**" button in the settings area.

# 6. Printing, storing and loading the acquisition file

Here the description of some command in the "File/xx" selection.



## 6.1 Store or Export Tracks

The acquisition can be "stored" on file using toolbar or the "File" menu, select "Save As".

A file name with .SSX extension is prompted, it corresponds to the acquisition name.

This acquisition can later be recalled through "File\Open Acquisition".

The acquisition can also be "**exported**" on file for future use. From the "File" menu, select "Export Tracks". A file name with .OSC extension is prompted; it corresponds to the acquisition name, if present. File OSC is a text file with acquisition data, you can open with some program like Microsoft Excel.



Is possible also export Tracks in OSCx extension, this XML format.

## 6.2 Load Offline tracks

Is possible also Load another acquisition as "offline traces" as reference background with the time shift option. This done with the "File/Load Offline tracks":



### 6.3 Download Previous Acquisition:

Possibility to start acquisition, close the SoftScope and reconnect later to download the result (same file .SSX). If you Run Acquisition with trigger status move to Pre-trig, if you close SoftScope and the trigger condition occurs the acquisition is done in the target.

Later when you open again WEG\_SoftScope 3 with the same file .SSX the program automatically download the last acquisition done with SoftScope not running:



# 7. Toolbar

The first bar is the Menù Bar and contains all the command.

The toolbar includes the most frequently used commands; if the cursor is left for few seconds over a button, the corresponding command name will appear. There are two toolbar, **Main Toolbar** and **Graph Toolbar**.



The buttons are enabled or disabled according to the drive communication state and to the acquisition state.

#### Main ToolBar:

Main Tool	Bar	
Icon	Command ToolBar	Command Menù
*3	New	File/New
<b></b>	Open	File/Open
-	Save	File/Save
	Save As	File/Save As
<u></u>	Load offline tracks	File/Load offline tracks
×	Remove selected tacks	Edit/Remove selected tracks
ŧ	Connect	On-Line/Connect
ंग	Communication Settings	On-Line/Communication Settings
۲	Run Acquisition/Stop Acquisition	Acquisition/Run Acquisition
	Stop Acquisition	Acquisition/Stop Acquisition
11	Pause Acquisition (Not used)	
	Download Last Acquisition	Acquisition/Download Last Acquisition
3	Continuous Capture	Acquisition/Continuous Capture
+	Single Sequence Capture	Acquisition/Single Sequence Capture
$\sim$	Auto trigger mode	Acquisition/Auto trigger mode using specified trigger source
, <mark>√</mark> V	Normal trigger mode using specified trigger source	Acquisition/Normal trigger mode using specified trigger source
T)	Force Trigger	Acquisition/Force Trigger

#### Graph ToolBar:

Graph To	Graph Tool Bar						
Icon	Command ToolBar	Command Menù					
	Toggle grid	Graph/Toggle grid					
	Show measure bar	Graph/Show measure bar					
***	Show acquisition	Graph/Show acquisition					
$\sim$	Vertical split	Graph/Vertical split					
5	Undo zoom settings	Graph/Undo zoom settings					
4	Show all value	Graph/Show all value					
<b>⊕</b>	Show all values for selected tracks	Graph/Show all values for selected tracks					
	Horizontal Zoom In	Graph/Horizontal Zoom In					
	Horizontal Zoom Out	Graph/Horizontal Zoom Out					
++	Horizontal show all	Graph/Horizontal show all					
<b>₽</b> <sup>+</sup>	Vertical zoom in	Graph/Vertical zoom in					
₽5	Vertical zoom out	Graph/Vertical zoom out					
1	Vertical show all	Graph/Vertical show all					

# 8. Appendix A : WEG\_SoftScope 3 with MdPIc Applications

When you use SoftScope with MDPLC application, it's possible add to the list also the target variable (application parameter and variables) and also the project global and local variable.

This is very useful for the use, test and debug of the application program.

If the target is an MDPLC application, the "PLC Symbols" area shows all global variables, targets variables/parameter, local variables of the PLC project currently running on the target.



Now with Drag & Drop operation you can operate also with system variables, application target and global vars all in the list.



# 9. Appendix B: WEG\_SoftScope 3 Installation

In this appendix there are all the information and procedure to install SoftScope3.

The installation procedure are the following:

- 1. Exit from all the Windows programs before running this Setup program.
- 2. Start the "SoftScope\_3.1.4.0.exe" file from setup file and follow the instructions.

The windows displayed during the installation procedure are shown below;

🔂 Setup - WEG_SoftScope3	- 🗆 X	讨 Setup - WEG_SoftScope3 — 🗆	×
	Welcome to the WEG_SoftScope3 Setup Wizard	Select Destination Location Where should WEG_SoftScope3 be installed?	J
	This will install WEG_SoftScope 3.1.4.0 on your computer.	Setup will install WEG SoftScope3 into the following folder.	
	It is recommended that you close all other applications before continuing.	To continue, dirk Next, If you would like to select a different folder, dirk Browse	
	Click Next to continue, or Cancel to exit Setup.	C:\Program Files (x86)\WEG PC Tools  Rrowse  Rrowse	
		At least 15,0 MB of free disk space is required.	
	Next > Cancel	< Back Next > Cance	el
🔂 Setup - WEG_SoftScope3	– 🗆 X	_	
Select Destination Locat	ion	🔂 Setup - WEG_SoftScope3 — 🗌	×
Where should WEG_SoftS	cope3 be installed?	Select Start Menu Folder Where should Setup place the program's shortcuts?	B
Setup will install	WEG_SoftScope3 into the following folder.	Setup will create the program's shortcuts in the following Start Menu folder.	
To continue, click Next. If	you would like to select a different folder, click Browse.	To continue, click Next. If you would like to select a different folder, click Browse.	
C: \Program Files (x86) \W Folder Exists	EG PC Tools Browse	WEG\WEG_SoftScope3 Browse	
? The folder:			
C:\Program File	s (x86)\WEG PC Tools		
already exists. V	Vould you like to install to that folder anyway?		
-	Si No < back rext > Cancel	< Back Next > Cancel	2
👸 Setup - WEG_SoftScope3	- 🗆 🗙	⊮ Setup - WEG_SoftScope3 — □	×
Select Additional Tasks Which additional tasks sh	iould be performed?	Ready to Install Setup is now ready to begin installing WEG_SoftScope3 on your computer.	D
Select the additional task WEG_SoftScope3, then a	is you would like Setup to perform while installing dick Next.	Click Install to continue with the installation, or click Back if you want to review or change any settings.	
Additional shortcuts:		Destination location: C:\Program Files (x86)\WEG PC Tools	
✓ Create a desktop sh	ortcut	Start Menu folder:	
		WEG_VEG_SOTTSCOPE3	
		Additional shortcuts: Create a desktop shortcut	
		v	
	< Back Next > Cancel	< Back Install Cancel	ł

At this point usually the installation start, some time it can happen that the installation do not start and the following window appears:



The list shows open programs/services that may use files that need to be checked by setup. Is possible close manually or automatically the listed programs (Eg. Skype, Lotus Note ...). After that click in the box "Do not close the applications' or ignore to proceed anyway.



#### The installation start.



If the installation finish without any error and the following window appears then the istallation is completed correctly.

If the installation stops and give some error message means that one or more files is currently used one of the program/services listed above. In this case you need to close automatically or manually the program/services and repeat the installation.

🛃 Setup - WEG_SoftScope3	- 🗆 ×
	Completing the WEG_SoftScope3 Setup Wizard
	Setup has finished installing WEG_SoftScope3 on your computer. The application may be launched by selecting the installed shortcuts.
	Click Finish to exit Setup.
	☑ Launch WEG_SoftScope3
R	
	Finish

If you press Finish exit Setup and Launch WEG\_SoftScope 3.

File Edit View On-line Acquisition Graph Options	Help
Parameters 4 ×	
+ New acquis	ition
Open acqu	isition
Мс	ost recent acquisitions
	WEG_Softscope3
Ready	

The installation is completed successful.

### User Manual

Series: WEG\_SoftScope 3 Revision: 0.1 Date: 4-1-2023 Code: 1S9SF3EN WEG Automation Europe S.r.l. Via Giosuè Carducci, 24 21040 Gerenzano (VA) · Italy

