



sylvac

Swiss manufacturer of precision measuring instruments since 1969

Universal display unit

D300S



User guide

Software version V1.21

Operating system V1.05



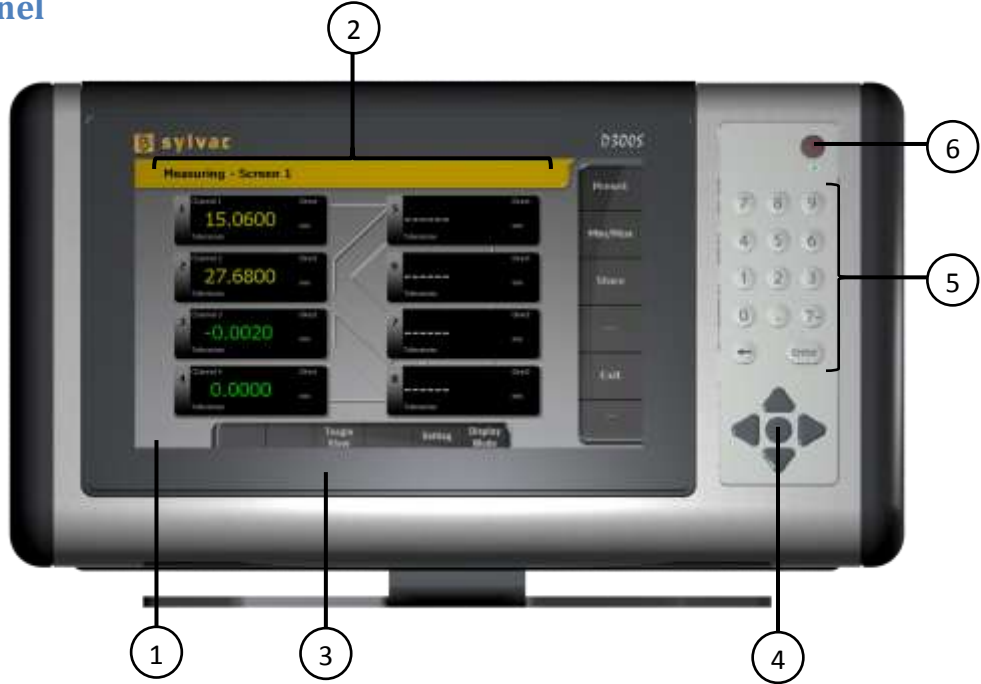
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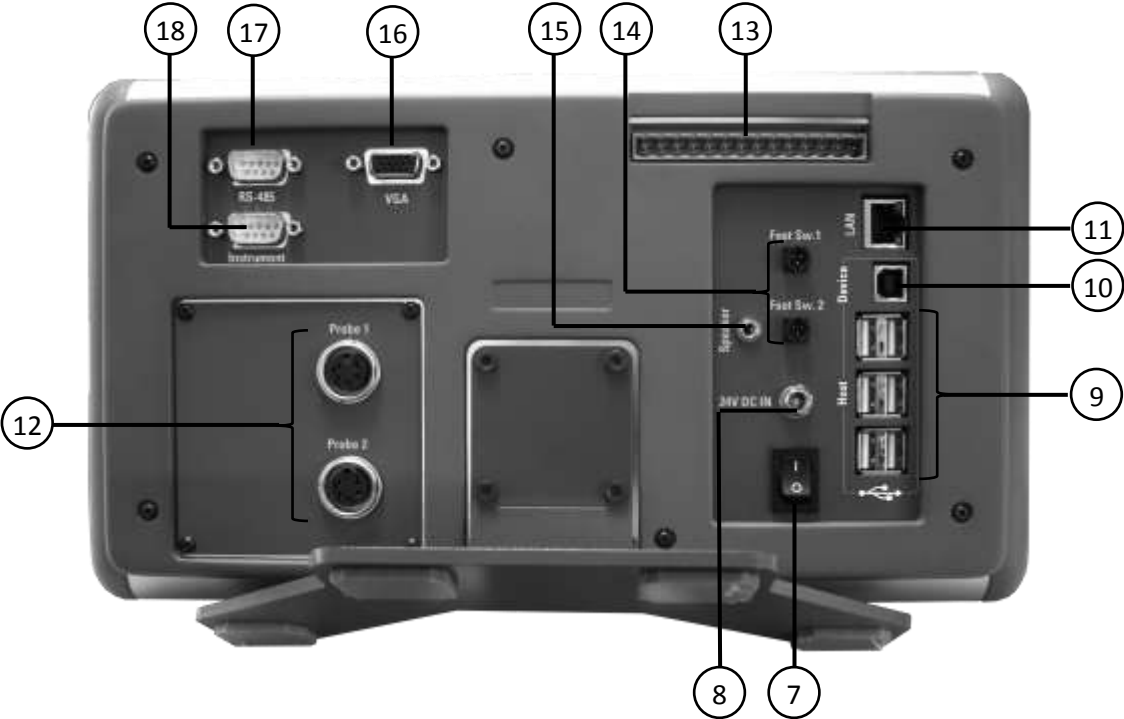
General description

The D300S is a display unit enabling the visualisation of the entire Sylvac hand instrument range and P2, P5, P10, P25, P50 probes. The intuitive interface enables the user to easily configure the device and solve most measurement problems met in production or in laboratory.

Front panel



Back panel



Connections description

1	8.5" touch screen
2	Configurable user interface
3	IP65 front panel
4	Navigation buttons
5	Numeric keypad
6	Standby button
7	Master switch for the unit
8	Connector for 24V power supply
9	USB ports for SYLVAC instruments, keyboard or mouse
10	USB port D300S -> PC
11	LAN port
12	SYLVAC probe inputs (4-input module available)
13	Digital inputs/outputs
14	External contacts (pedals, limit switch etc.)
15	Jack socket for speakers
16	VGA output
17	RS485 connector for connecting D302/D304 units
18	RS232 input for SYLVAC instrument

Input/output explanations

USB Host

Enables measurements sending to a PC. Depending on the operating system, a driver may be required. It can be downloaded directly from the www.ftdichip.com website

Communication parameters are as follows:

Baud Rate	4800
Parity	Even
Data Bits	7
Stop Bits	2
Flow Control	None

The list of retro-commands recognised by the D300S are found in the « Retro-command codes list » chapter, P. 17.

USB Device

Enables the connection of measurement instruments through a usb cable (Proximity-USB, Opto-USB, Power-USB, ...). It is possible to extend the number of USB ports using a usb hub.

30 USB instruments at the most can be connected at the same time.

Power Switch

Allows the complete switching off of the unit

Sustain pedal input

Two pedals can be connected. Two extra external contacts are also available on the screw terminal (Switch 1 and 2).

Network connection (RJ45)

The connection to a local network enables amongst other things the retrieval of recorded data (ex: recorded measurements, configuration files, ...)

Speakers (Jack)

Input enabling the connection to a speaker.

VGA output

Enables the connection of the D300S to an external screen or projector.

Note : The resolution stays identical to the unit's one, i.e. 800x400. It cannot be modified.

RS485

Enables the connection of the D302 and D304 probe modules.

RS232

Enables the connection of a RS232 instrument with a Duplex cable.

Probe input

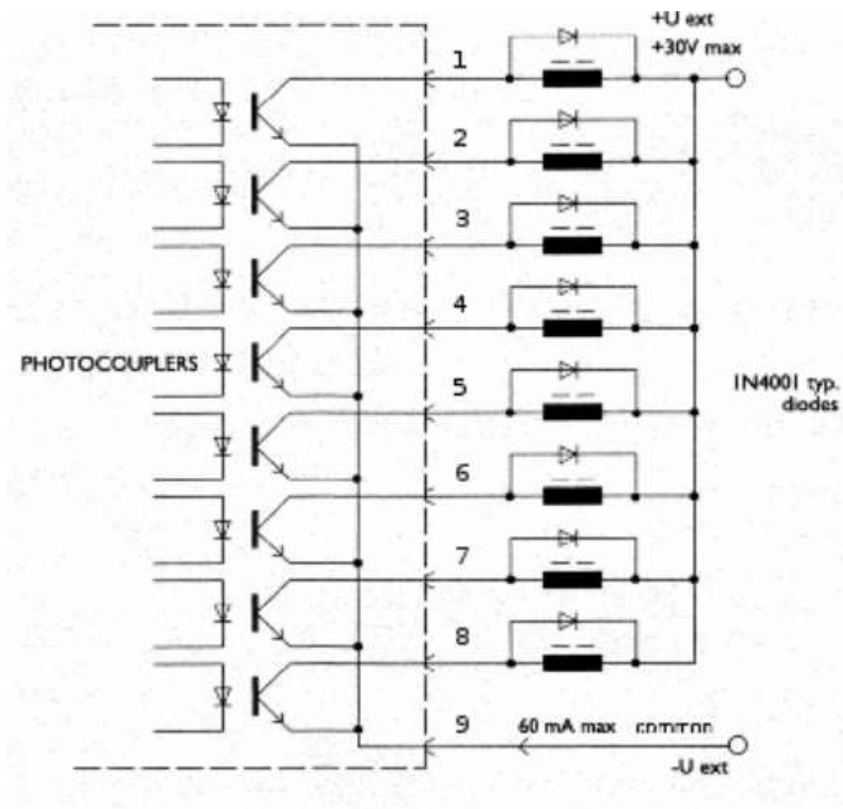
Enables the connection of the Sylvac probes (P2, P5, P10, P25, P50).

Digital outputs



N°	Function
1	Output isolated by optocoupler
2	Output isolated by optocoupler
3	Output isolated by optocoupler
4	Output isolated by optocoupler
5	Output isolated by optocoupler
6	Output isolated by optocoupler
7	Output isolated by optocoupler
8	Output isolated by optocoupler
9	Common for the 8 optocoupler outputs
10	Switch 1
11	Switch 2
12	External power supply +24V (input)
13	GND
14	Internal power supply +24V (output)

Schematic representation

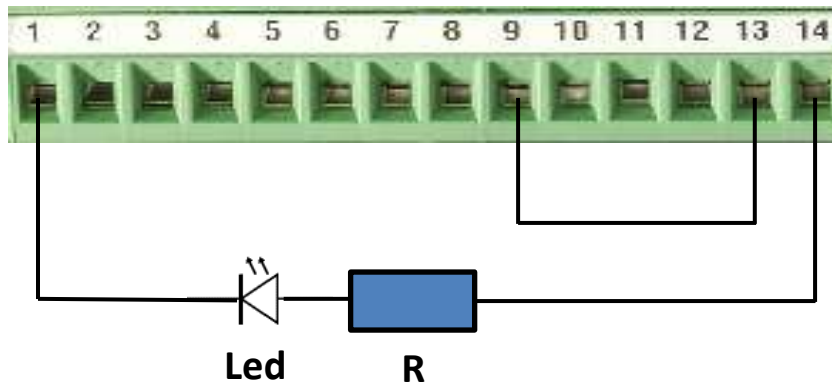


The maximum voltage is **30V** and the maximum current is **60mA** per output.

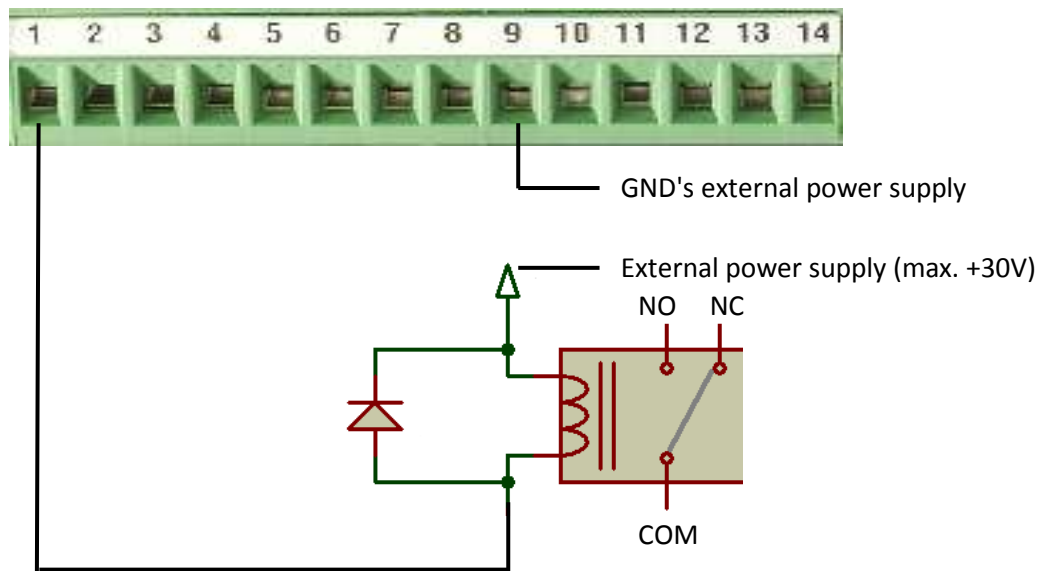
The supply voltage of the optocoupler outputs are normally brought from the outside, the negative pole on the common transmitters (pin 9)

The protective diode is indispensable in case of inductive load (solenoid valve, relay, ...)

Example to connect a LED on the n°1 digital output

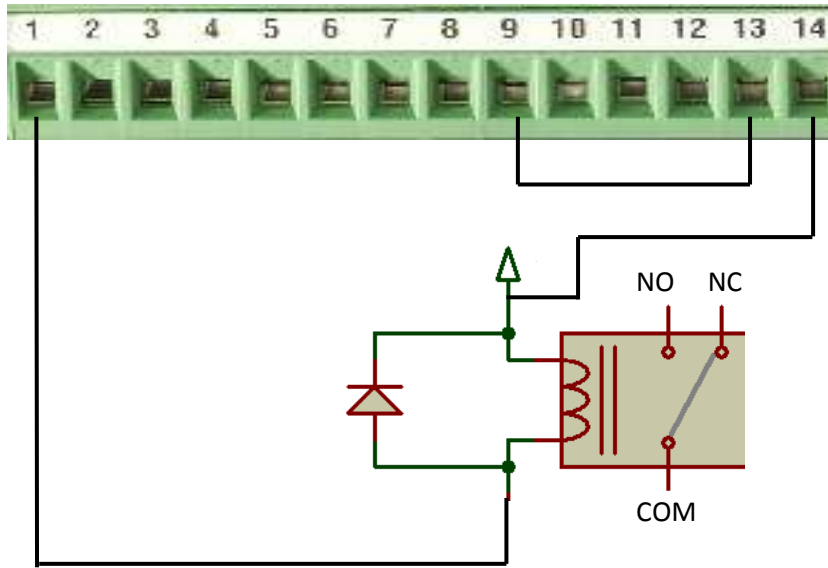


Example to connect a relay on a n°1 digital output (external power supply)



Note: a protective diode must be added in parallel of the relay if it isn't integrated.

Example to connect a relay on a n°1 digital output (internal power supply)



Note: a protective diode must be added in parallel of the relay if it isn't integrated.

Example to connect an external contact on the Switch 1 input



User interface

When you first switch on your D300S unit, the default interface will be active as shown below.

1	Window showing details of channel X
2	Active page indicator
3	Select page x/x
4	Configuration of number of pages (8 max.)
5	General configuration
6	Display type (shift to static mode)
7	Channel individual preset
8	Channel reset
9	Channel configuration
10	Measurement recording (of the active page)
11	Clear all displayed channels
12	Preset all displayed channels



While the unit switches off, all parameters are automatically saved. It is also possible to save your configurations in order to use your D300S for several different workstations.

When an instrument is connected, it is automatically assigned a channel. The cable's identification address is registered by the unit.

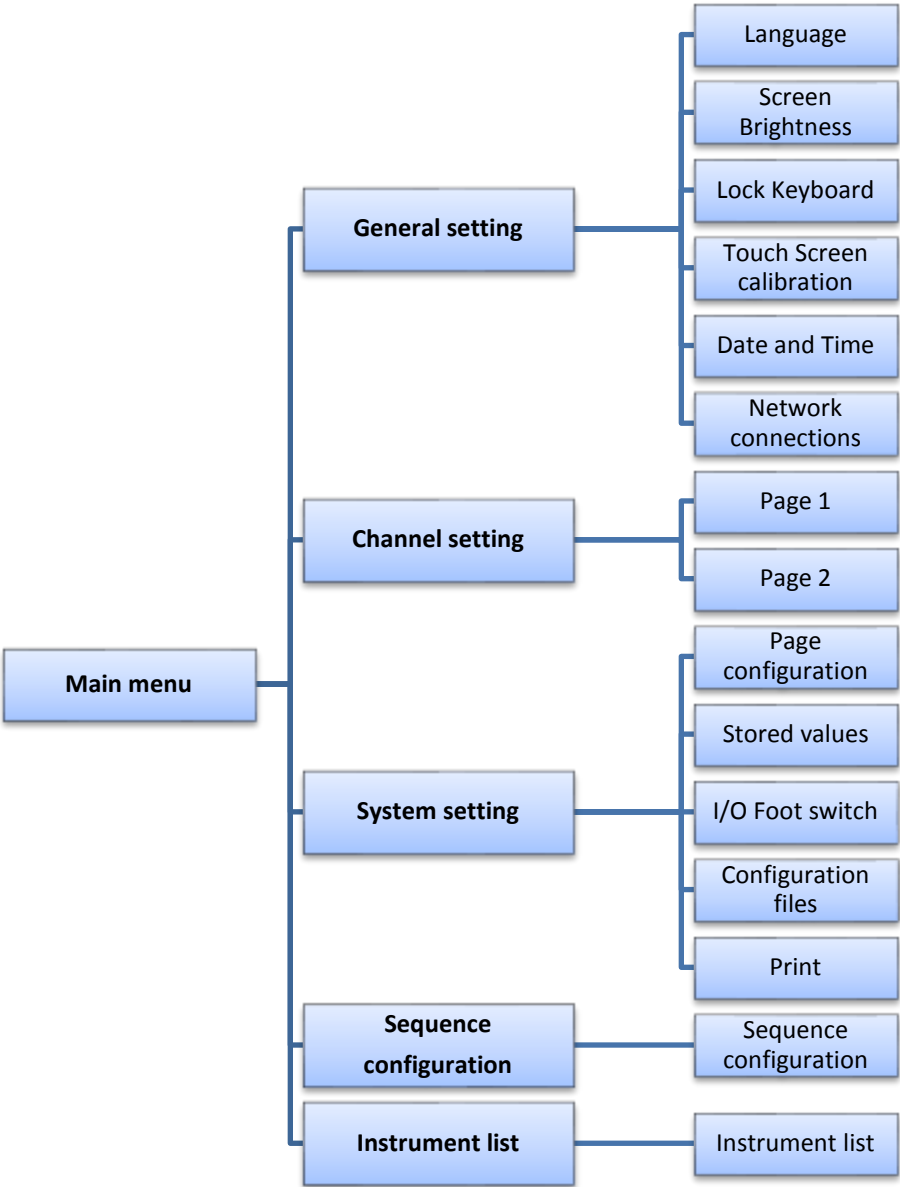
It is therefore vital not to switch it with other instruments. If you disconnect the cable from the unit and use a different USB port when you next connect it, the same channel will be reassigned to it.

The Setting menu

This menu enables the modification of all system parameters.



The setting menu tree



General setting

This menu allows you to configure the general parameters of your unit.



It is, amongst other things, possible to:

- Select the language
- Modify display brightness
- Lock the keyboard and tactile screen
- Modify the date and time
- ...

Channel setting

This menu allows you to configure the individual parameters of each channel.



Configuration of a channel's measurement parameters, such as tolerances or preset values.



Instrument allocation and measurement type selection thanks to the mathematical functions.

Tolerance mode

This option enables the modification of colours used to indicate statuses.

- <=> : red – green – yellow
- GO NOGO : red – green – red
- <=> (int) : yellow – green – red (interior measure)

Number of classes

selection of the number of classes wanted for the classification of measured values. It is possible to choose up to 8 classes. The classes are spread out proportionally between higher tolerance and lower tolerance.

Measurement mode

Direct : displays the value live

Max : displays the maximum value

Min : displays the minimum value

Delta : displays the difference (maximum - minimum)

Mean : displays the average (maximum + minimum)/2

Display mode

Digital : displays the digital value

Bargraph : displays the measurement as a bargraph

System setting



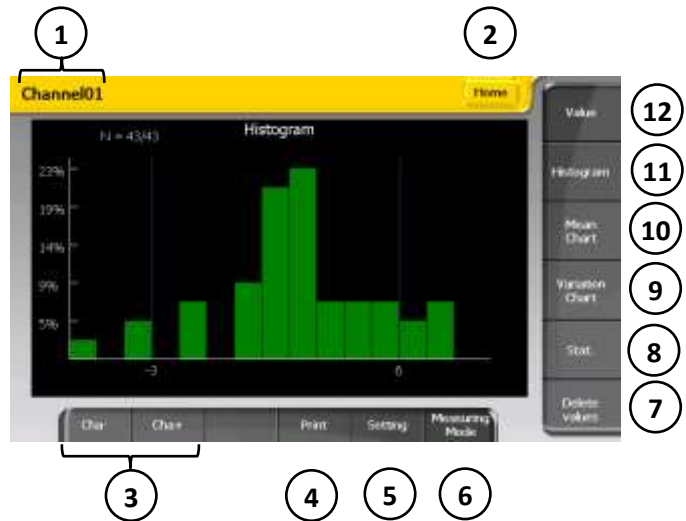
This menu enables access to the unit's global configuration :

- Display configuration
- Digital output configuration
- Configuration recording
- Recorded measures visualisation
- Modify printing options

Statistics

This mode enables the display of statistics. They are calculated individually per channel and are based on the values recorded by the user.

1	Window showing details of channel X
2	Return to default screen
3	Displays the statistics of the next channel
4	Prints the statistics
5	General configuration
6	Display type (shift to measure mode)
7	Erase the recorded values of the active channel
8	Display the statistics table
9	Display the chart over the range (R)
10	Display the chart of the average (Xbar)
11	Display the histogram
12	Display the recorded value



The Histogram



The number of classes of the histogram is fixed at 9. On the vertical axis (Y axis) we have the amount in % of recorded values in each class.

The lower and higher tolerance limits are indicated on the X axis. The values beyond the tolerance limits of over 3 classes are not displayed. N indicates the number of values displayed in the histogram over the total amount of values

The chart of the average (Xbar)



UCL : Upper control limit

$$\bar{X} + A_2 * \bar{R}, \text{avec } A_2 = 0.577 \text{ pour } n = 5$$

LCL : Lower control limit

$$\bar{X} - A_2 * \bar{R}, \text{avec } A_2 = 0.577 \text{ pour } n = 5$$

Values beyond the control limits are indicated in red.
Values within the control limits are indicated in green.

The chart over the range (R)



UCL : Upper control limit

$$D_4 * \bar{R}, \text{ avec } D_4 = 2.114 \text{ pour } n = 5$$

LCL : Lower control limit

$$D_3 * \bar{R}, \text{ avec } D_3 = 0 \text{ pour } n = 5$$

Values beyond the control limits are indicated in red.

Values within the control limits are indicated in green.

The statistics table



N : the amount of recorded values

Xmax : maximum recorded value

Xmin : minimum recorded value

R (Range) : Xmax – Xmin

Xbar (average) : $\frac{\sum_{i=1}^N X_i}{N}$

σ (sigma) = standard-deviation : $\sqrt{\frac{\sum_{i=1}^N (X_i - \bar{X})^2}{N}}$

S (standard deviation) = population standard-deviation based on a sample : $\sqrt{\frac{\sum_{i=1}^N (X_i - \bar{X})^2}{N-1}}$

-3s : $\bar{X} - 3s$ (lower regulation or intervention limit)

+3s : $\bar{X} + 3s$ (upper regulation or intervention limit)

-NG : amount of recorded measures below the lower tolerance limit

+NG : amount of recorded measures above the upper tolerance limit

%Def : $\frac{(-NG)+(+NG)}{N} * 100$ (percentage of faulty measures)

Cp (process capability) : $\frac{T_{sup}-T_{inf}}{6 \sigma}$

Cm (machine capability) : $\frac{T_{sup}-T_{inf}}{6 s}$ s calculated over a sample at time instant t

Cmk (centring capability) : the lowest value between the 2 following formulas $\frac{T_{sup}-\bar{X}}{3 s}$ and $\frac{\bar{X}-T_{inf}}{3 s}$

Cpk (centring capability process) : the lowest value $\frac{T_{sup}-\bar{X}}{3 \sigma}$ and $\frac{\bar{X}-T_{inf}}{3 \sigma}$

Communication with a PC

The D300S can be managed from a PC via the « **USB-PC** » input. Retro-commands are used to this end, they enable, amongst other things, the modification of the unit's parameters and the request of values from different channels.

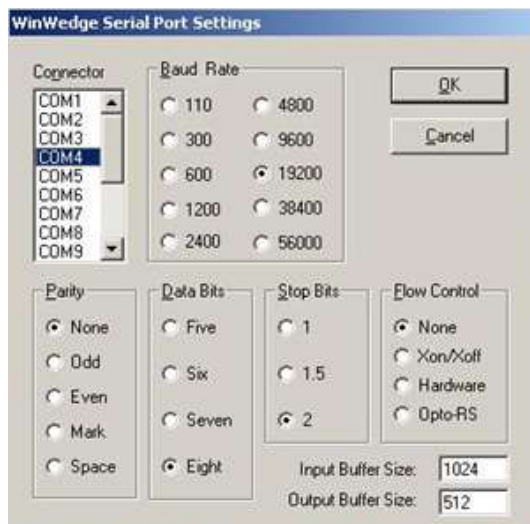
Communication parameters are as follows:

Baud Rate	4.800
Parity	Even
Data Bits	7
Stop Bits	2
Flow Control	None

Communication example with Winwedge 32 software



Startup the Winwedge 32 software



Select the port used

Example : **COM4**

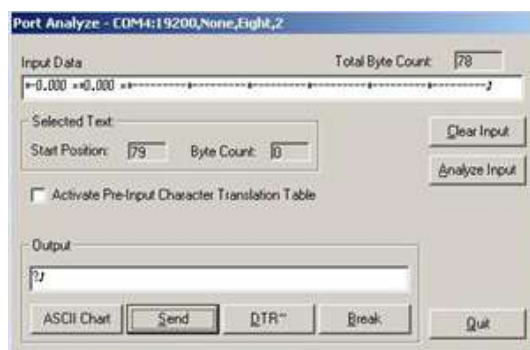
Select the communication parameters.

Baud Rate : **4800**
 Parity : **Even**
 Data Bits : **Seven (7)**
 Stop Bits : **2**
 Flow control : **None**

Then click OK



Select Analyse



Type in the "output" window the retro-command "?" followed by the "CR" carriage return ASCII (13) character to display the value of active channels.

Click on the "**send**" button

In the Input Data window, the channel value is displayed.

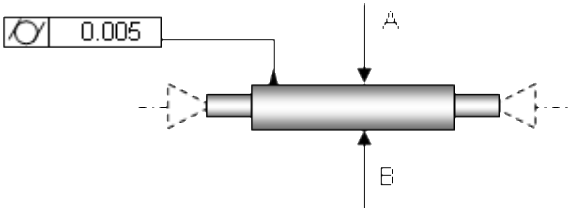
Retro-command codes list

Command	Function																																	
?	The unit sends the value of the active channels																																	
?x x = channel nb (1 to 64)	The unit sends the value of the selected channel Ex : « ?6 » the value of channel 6 is sent																																	
?x-y x,y = channel nb (1 to 64)	The unit sends the value of the array of selected channels Ex : « ?3-6 » the values of channels 3 to 6 are sent																																	
VER?	Displays the version of the software																																	
SCREEN?	Displays the active page																																	
SCREENx (x = 1 to 8)	Activates the selected page																																	
CHAx (x = 1 to 64)	Activates the selected channel Ex : « CHA6 » selection of channel 6																																	
Fsx (x = 1 to 4)	Activate the external contact function X = 1: switch 1 X = 2: switch 2 X = 3: Foot pedal 1 X = 4: Foot Pedal 2 Ex : « FS4 » activates the Foot Pedal 2 function																																	
EXTxFACTy:z (x = 1 to 4) (y = 1 to 4) (z = 1 to 10)	Configuration of the concerned external contact. 4 different configurations can be allocated to a same external contact. A delay between the different functions can be entered thanks to the « EXTxDELAYy:z » command.																																	
	<table border="1"> <tbody> <tr> <td>X = 1: switch 1</td> <td>Y=1: function 1</td> <td>Z=0: none</td> </tr> <tr> <td>X = 2: switch 2</td> <td>Y=2: function 2</td> <td>Z=1: preset</td> </tr> <tr> <td>X = 3: Pedal 1</td> <td>Y=3: function 3</td> <td>Z=2: clear</td> </tr> <tr> <td>X = 4: Pedal 2</td> <td>Y=4: function 4</td> <td>Z=3: print</td> </tr> <tr> <td></td> <td></td> <td>Z=4: store</td> </tr> <tr> <td></td> <td></td> <td>Z=5: D110 lowering</td> </tr> <tr> <td></td> <td></td> <td>Z=6: D110 lifting</td> </tr> <tr> <td></td> <td></td> <td>Z=7: D110 lowering/lifting</td> </tr> <tr> <td></td> <td></td> <td>Z=8: Hold ON</td> </tr> <tr> <td></td> <td></td> <td>Z=9: Hold OFF</td> </tr> <tr> <td></td> <td></td> <td>Z=10: Hold ON/OFF</td> </tr> </tbody> </table>	X = 1: switch 1	Y=1: function 1	Z=0: none	X = 2: switch 2	Y=2: function 2	Z=1: preset	X = 3: Pedal 1	Y=3: function 3	Z=2: clear	X = 4: Pedal 2	Y=4: function 4	Z=3: print			Z=4: store			Z=5: D110 lowering			Z=6: D110 lifting			Z=7: D110 lowering/lifting			Z=8: Hold ON			Z=9: Hold OFF			Z=10: Hold ON/OFF
	X = 1: switch 1	Y=1: function 1	Z=0: none																															
X = 2: switch 2	Y=2: function 2	Z=1: preset																																
X = 3: Pedal 1	Y=3: function 3	Z=2: clear																																
X = 4: Pedal 2	Y=4: function 4	Z=3: print																																
		Z=4: store																																
		Z=5: D110 lowering																																
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		Z=7: D110 lowering/lifting																																
		Z=8: Hold ON																																
		Z=9: Hold OFF																																
		Z=10: Hold ON/OFF																																
Ex : « EXT3FCT1:1 » configures pedal 1 with the Preset function																																		
EXTxDELAYy:z (x = 1 to 4) (y = 1 to 3) (z = 100 to 99999999)	Introduction of a delay in [ms] between the execution of the different functions of the external contact.																																	
	<table border="1"> <tbody> <tr> <td>X = 1: switch 1</td> <td>Y=1: delay 1</td> <td>Z = time in ms</td> </tr> <tr> <td>X = 2: switch 2</td> <td>Y=2: delay 2</td> <td>(min value = 100</td> </tr> <tr> <td>X = 3: Foot pedal 1</td> <td>Y=3: delay 3</td> <td>ms)</td> </tr> <tr> <td>X = 4: Foot Pedal 2</td> <td></td> <td></td> </tr> </tbody> </table>	X = 1: switch 1	Y=1: delay 1	Z = time in ms	X = 2: switch 2	Y=2: delay 2	(min value = 100	X = 3: Foot pedal 1	Y=3: delay 3	ms)	X = 4: Foot Pedal 2																							
	X = 1: switch 1	Y=1: delay 1	Z = time in ms																															
X = 2: switch 2	Y=2: delay 2	(min value = 100																																
X = 3: Foot pedal 1	Y=3: delay 3	ms)																																
X = 4: Foot Pedal 2																																		
Ex : « EXT3DELAY1 :1000 » introduction of a 1000ms delay between the execution of function 1 and 2 of pedal 1.																																		
KEYO	Activates the keyboard and tactile screen																																	

KEY1	Locks the keyboard and tactile screen
STO?x (x = 1 to 64)	Returns recorded values of the requested channel Only works in static mode
#xx#+... (xx : 1 to 64)	All the following retro-commands are preceded by « #xx# ». This means you must specify the channel on which the command is carried out. If the channel number is not specified, the command is executed on all active channels.
#xx#VIEWx (x = 1 to 5)	Select the measure mode or the static mode X = 1: measure mode X = 2: displays the histogram (statistic mode) X = 3: displays the chart on average (statistic mode) X = 4: displays the chart on the range (static mode) X = 5: displays the statistics table (statistics mode) Ex : « #06#VIEW2 » displays the channel 2 histogram.
#xx#RES1	Changes the resolution: 0.0001
#xx#RES2	Changes the resolution: 0.001
#xx#RES3	Changes the resolution: 001
#xx#RES4	Changes the resolution: 0.1
#xx#BAR	Selects the bargraph display mode
#xx#NUM	Selects the digital display mode
#xx#MAX	Selects the maximum measure mode
#xx#MIN	Selects the minimum measure mode
#xx#DEL	Selects the delta measure mode (max-min)
#xx#NOR	Selects the normal measure mode
#xx#MM	Sets the measure unit in millimetres
#xx#IN	Sets the measure unit in inches
#xx#PRE?	Returns the Preset value
#xx#PRE+xxx.xxx	Configures the Preset value
#xx#PRE	Loads the recorded Preset value
#xx#TOL?	Returns the recorded tolerance values
#xx#TOLabc (a = Nominal value) (b = lower tolerance) (c = upper tolerance)	Configures the tolerance values. Enters the values with their sign. Ex : « #06#+1.0-0.5+0.5 » the following configuration is entered for channel 6 : Nominal value = +1.0 Lower tolerance value = -0.5 Upper tolerance value = +0.5
#xx#CLA?	Returns the amount of classes used
#xx#CLAx (x = 1 to 8)	Configures the amount of classes. 8 classes maximum can be introduced.

All retro-commands must end by a carriage return « **CR** »

Configuration example with two measurement points



Step 1 : Display configuration

We start by configuring the number of pages and channels to display.



To do this, use the « **page...** » button (also accessible through the **Setting** → **System Setting** menu).

For our example, we will display channel 1 per page. Once the data is entered, use the « **Home** » or « **back** » button to exit the « **Setting** » menu. The modifications are automatically saved.



Step 2 : Channel attribution and configuration

Once the display is configured, we can select the instruments that will be allocated to the different channels and enter the tolerance and Preset values.



To do this, use the « ... » button (also accessible through the **Setting → Measurement Setting** menu).



In this menu, parameters such as Preset values, tolerances, ... can be entered.

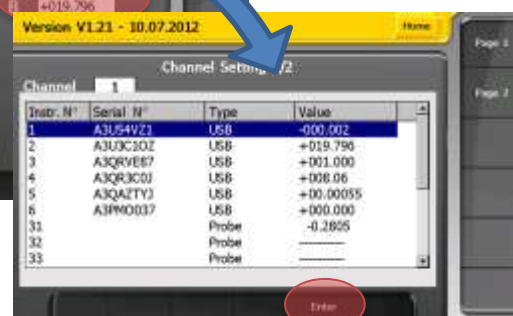
Then to access the mathematical functions menu, click on « **Page 1** ».



To select a mathematical function, press on **+A**, then chose the A+B mathematical function.



Allocate the instruments to be used to carry out the calculation. Select the instruments for channel A then channel B.

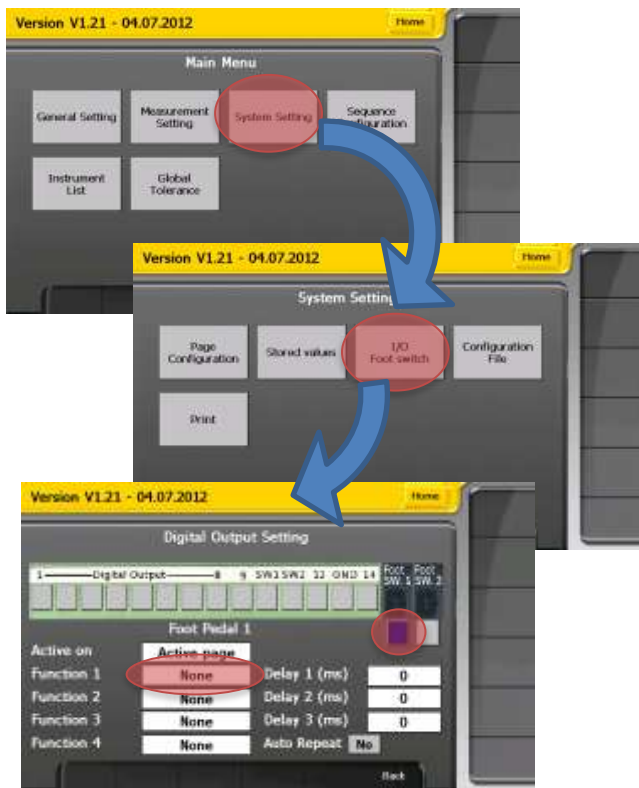




By moving the instrument, the value will also move on the A and B displays. This enables one to check the instrument selection. To finish press « **Home** » to exit the configuration menu.

Step 3 : External contacts configuration

Two pedals will be used, one to create a Preset and the other to record the values.



To do this, you must enter the « **Setting** » menu, then select **System setting** → **I/O Foot Pedal**.

In the « **digital output Setting** » menu :

- Select « **Foot SW 1** » then chose under « **Function 1** » Preset.
- Select « **Foot SW 2** » then chose under « **Function 1** » Store.
- Exit through the « **Home** » or « **Back** » button

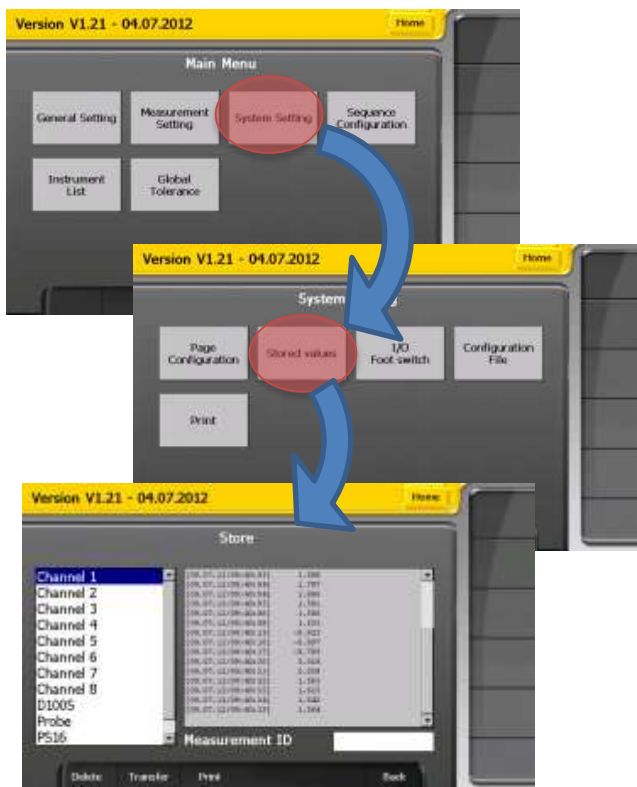
Step 4 : The measurement



At present, channel 1 is configured to display the A+B value of the two selected instruments and the colour indicates the measurement's status (according to the entered tolerances).

Pedal 1 reminds the Preset value and Pedal 2 records the value.

Step 5 : Visualisation of recorded values

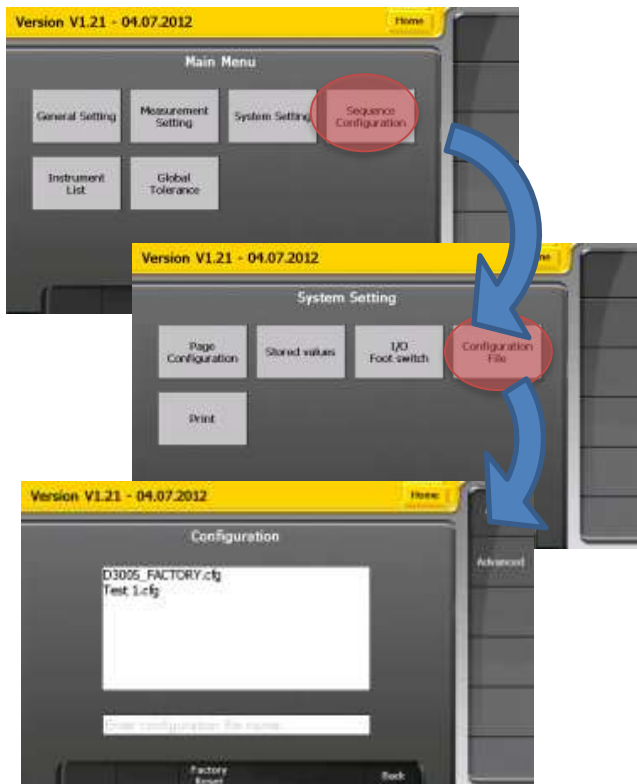


To visualise the recorded values, you must select the **System setting** → **Stored values** menu.

In this menu, it is possible to choose to visualise the **backup file**. The name of the file corresponds to the **channel name** (can be modified by the user in the **Measurement Setting** → **Page 2** menu).

This file can then be transferred on a USB key in .CSV format. To do this, simply connect a USB key then click on the « **Transfer** » button.

Step 6 : Save the configuration



All the unit's configuration parameters (tolerances, presets, setups, ...) can be saved or restored.

To **save** a configuration, simply enter the file name in the intended field and click on the « **Save** » button. The name of the file will appear in the selectable configurations list.

To restore a configuration, simply select the file to recall and click on « **Open** ». Then you will have to wait a few seconds will the configuration loads.



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Toutes modifications réservées
Änderungen vorbehalten
Changes without prior notice

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