DISCOVER THE MUST-HAVE INNOVATIVE AND MULTI-BRANDS COMPATIBLE DISPLAY UNIT!

The new Display Units **D70S/H/I** : available in 3 versions for capacitive, inductive and incremental probes. Compatible with most of the probes from Heidenhain, Magnescale, Mahr, Tesa, etc.

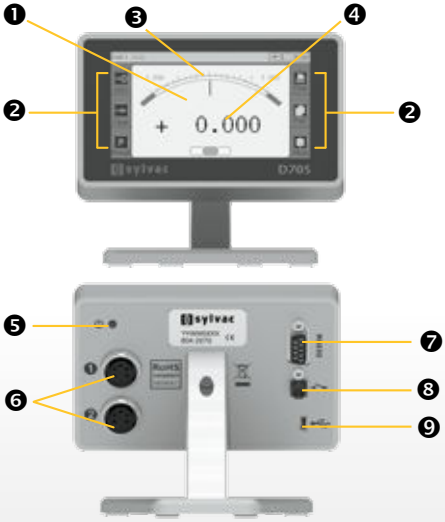


Display Units D70S/H/I

- **4"3 touch screen display**
- All versions with 2 probe inputs
- **One or two channels displayed per screen**
- Analog or bargraph display style
- **MIN/MAX/DELTA/TOL and calculation functions**
- Connectable to PC by USB without driver

Display Units D70S/H/I

- ❶ 4.3" Touchscreen display
- ❷ User friendly interface
- ❸ Analogic display
- ❹ Digital display
- ❺ ON/OFF
- ❻ 2 Capacitive / Inductive / 1VPP probes input
- ❼ RS232 output
- ❽ External contact for optional foot pedal
- ❾ Mini USB for power supply and data transfer



TECHNICAL SPECIFICATIONS

Specifications	804.2070	804.2071	804.2072
Type	D70S	D70I	D70H
Probes type	Capacitive Sylvac	Inductive Sylvac (compatible with Tesa & Mahr)	Heidenhain (compatible with Mitutoyo & Magescale)
Size	140x105x111 mm		
Case	Plain Aluminium, 0.6 kg		
Protection	IP65 (front face) / IP40		
Connections	mini-USB / RS232		
Programmable by PC	●		


D70S back view


D70I back view


D70H back view

sylvac

Universal display unit
Unité d'affichage universelle
Universelle Anzeigeeinheit

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D70S/H/I



User guide
Manuel d'utilisation
Bedienungsanleitung

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Introduction

The D70 display uses 1 or 2 sensors to carry out any kind of measurement testing. Basic measurements (using a sensor) can be carried out, as can measurements of sums and measurements of differences.

The screen can be split to show two displays. The D70 can make direct (static) measurements or dynamic measurements (min, max, etc.)

Measurements can be made in comparison to a reference level, i.e. a benchmark.

The D70 has a large number of customisable functions, making it suitable for a vast range of testing applications. The D70 display can be connected to a PC using its RS-232 and USB ports. A multifunctional pedal can also be connected to the device.

Versions



D70S
Connections for Sylvac-brand or other compatible capacitive sensors



D70H
Connections for Heidenhain sensors



D70I
Connections for Sylvac-brand or other compatible inductive sensors

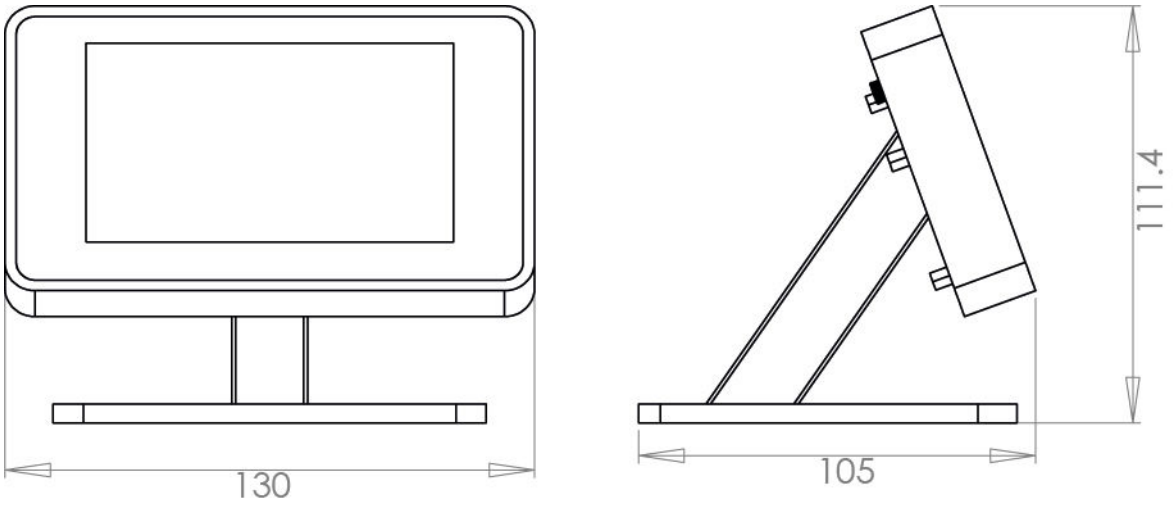
Features

Main technical features

- Colour 4.3» touchscreen, 480 x 272 resolution
- Static or dynamic measurements (min, max, average, etc.)
- Analogue and digital display
- 2 measurement configurations (2 measurements)
- Option to automatically select the configuration or select using the touchscreen
- Relative or absolute display selected using the touchscreen
- Display precision (from 2 to 5 decimal places)
- Metric (mm or µm) or imperial (in) units
- RS-232 port for PC communication
- M-Bus port for I/O connection
- USB port for PC connection and/or power supply

- Transfer measurements through the touchscreen, pedal input, or commands via the RS-232 port
- Operating temperature: +15°C to +30°C
- 85-265 V power supply via AC adapter provided (or by connecting it to a PC via the USB port)
- Relative humidity: maximum 80%
- Dimensions: width 14 mm, height 110 mm, depth 105 mm
- Weight: 600 g (700 g incl. adapter)

Dimensions and installation



The D70 has four M5-thread holes, meaning that it can be affixed to a worktop, or the base can be removed in order to place it anywhere.

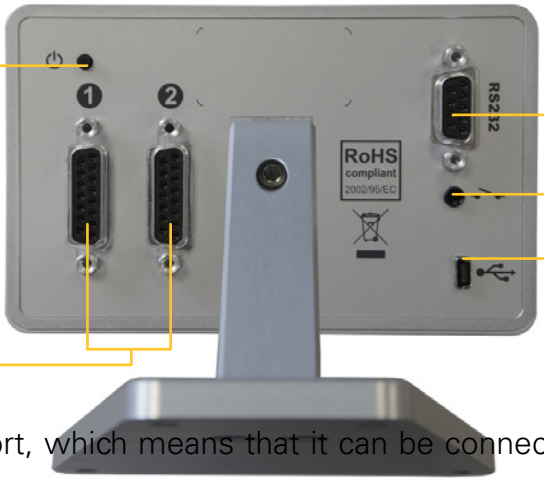
Note: The four anti-slip pads need to be removed before the D70 can be affixed to a worktop.

Connectivity

D70S and D70I



D70H



The D70 has an RS-232 port, which means that it can be connected to a machine or external system.

Connector pins

Communication ports

Equipped with a 9-pin SUB-D female connector.

Description of the RS-232 signals and pin assignments:

Pin	Signal	Direction	Description
1			Unused
2	RX	Input	Receive data
3	TX	Output	Transmit data
4	IN1	Input	Factory testing only, do not connect
5	Ground	-	Signal ground
6			Not used
7	IN2	Input	Factory testing only, do not connect
8 & 9			Not used

Mini-USB connector

The mini-USB connector has two functions:

1. Powering the display via the adapter. This adapter supplies a regulated constant voltage of 5V/1A.
2. Transferring measurements. If you connect the D70 to a PC, it will be detected as a keyboard using the standard drivers for the operating system. When you transfer a measurement, the number will be «written» to the PC as if you had typed it in on a keyboard.

Windows message confirming that the D70 has been correctly detected and installed:



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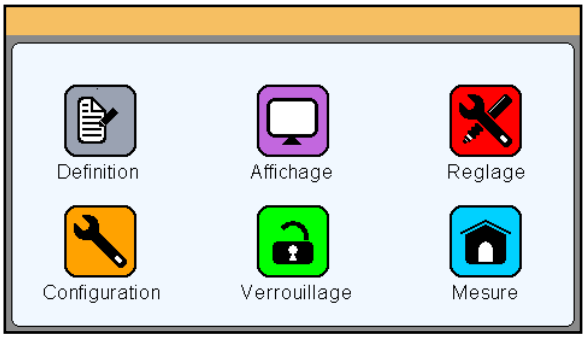
Graphical interface

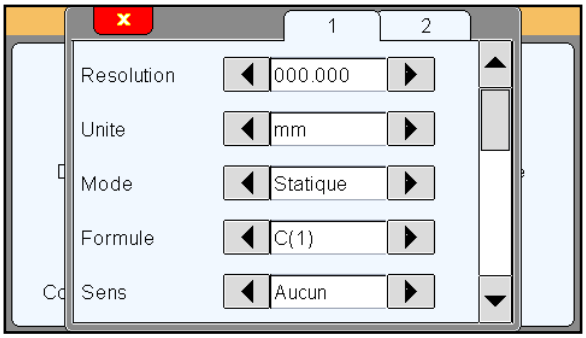
The graphical interface of your D70 has been designed for easy use. This chapter gives an overview of the various screens and commands available.

The two main parts

The graphical interface of your D70 is made up of two main parts:

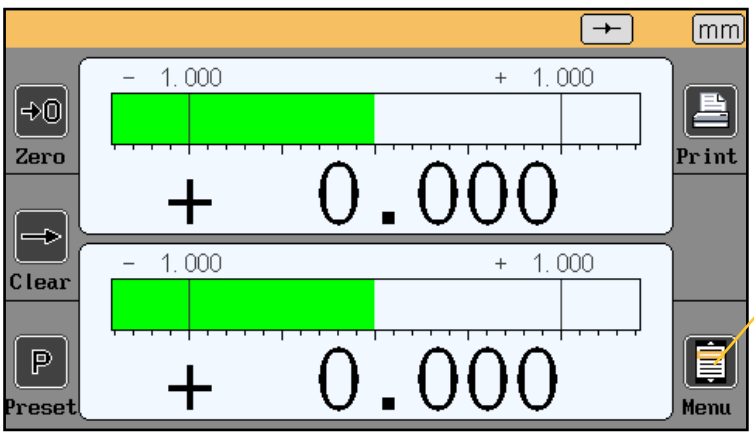
- One part where you can configure the device and the measurement. This screen is made up of icons that open other windows on top of the icon panel.





The second part of the display (measurement screen) can be launched by tapping the measure icon. 

- This part displays the results of measurements so that they can be used. The D70 starts up on this screen In order to access the icon panel, tap the menu icon on the measurement screen.



Measurement screen

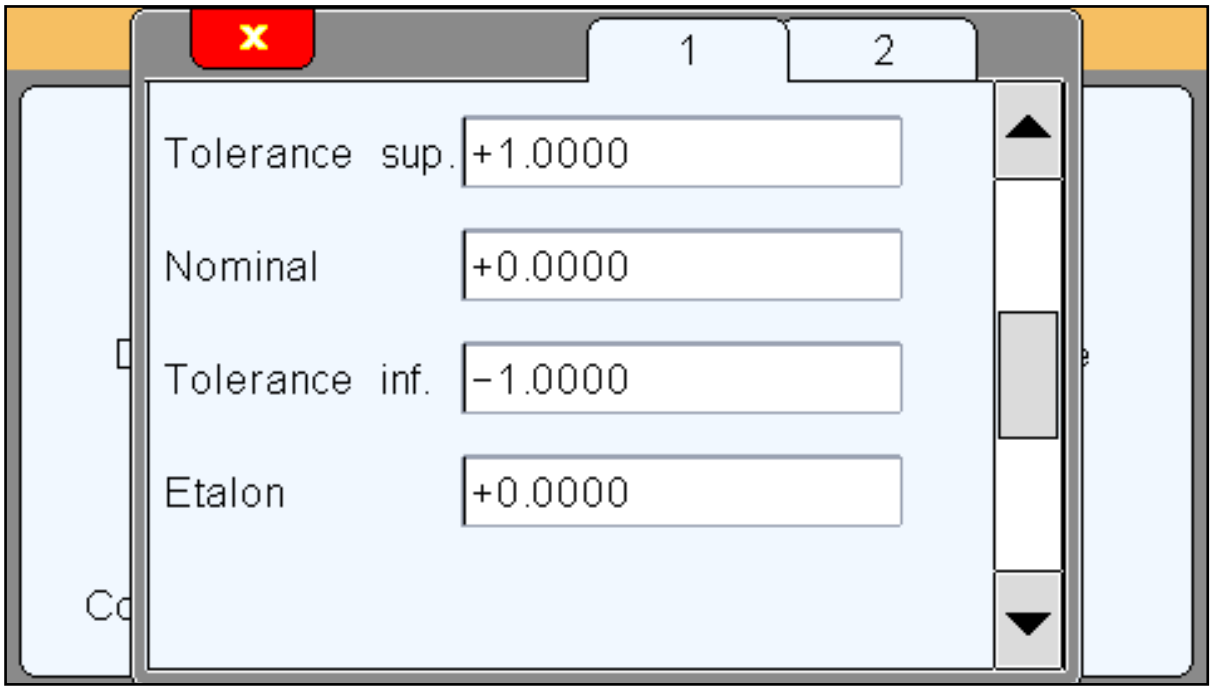
General details

The following information is visible at the top of the screen:



Configuration window

You can open configuration windows by tapping the icons in the icon panel.



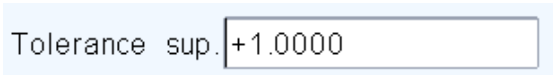
Example of window appearing on top of the icon panel

The information is then recorded in a variety of ways and saved for re-use when the window is closed. The following ways of recording the data are available:

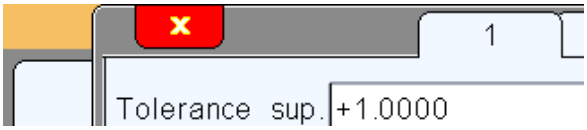
- Multiple choice box. Tap the black arrows to cycle through the values.



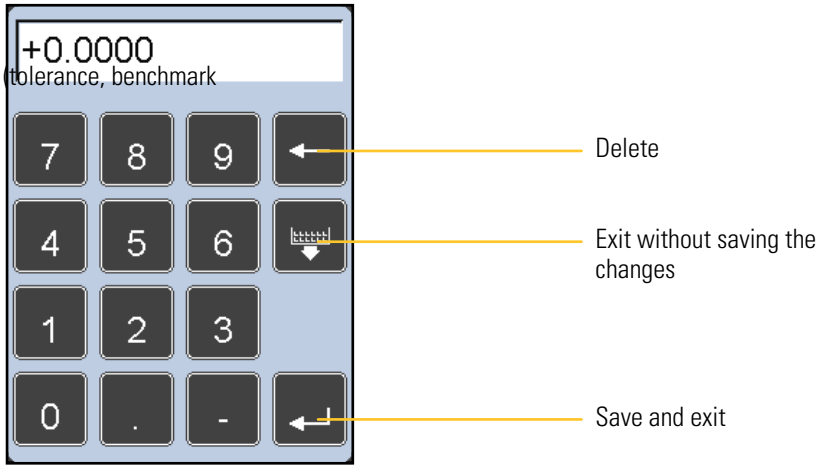
- Input box. When you tap the input box, a virtual keyboard appears.



- Closing a window. All windows can be closed by tapping the white X with a red background in the top-left of the window.



Virtual keyboard

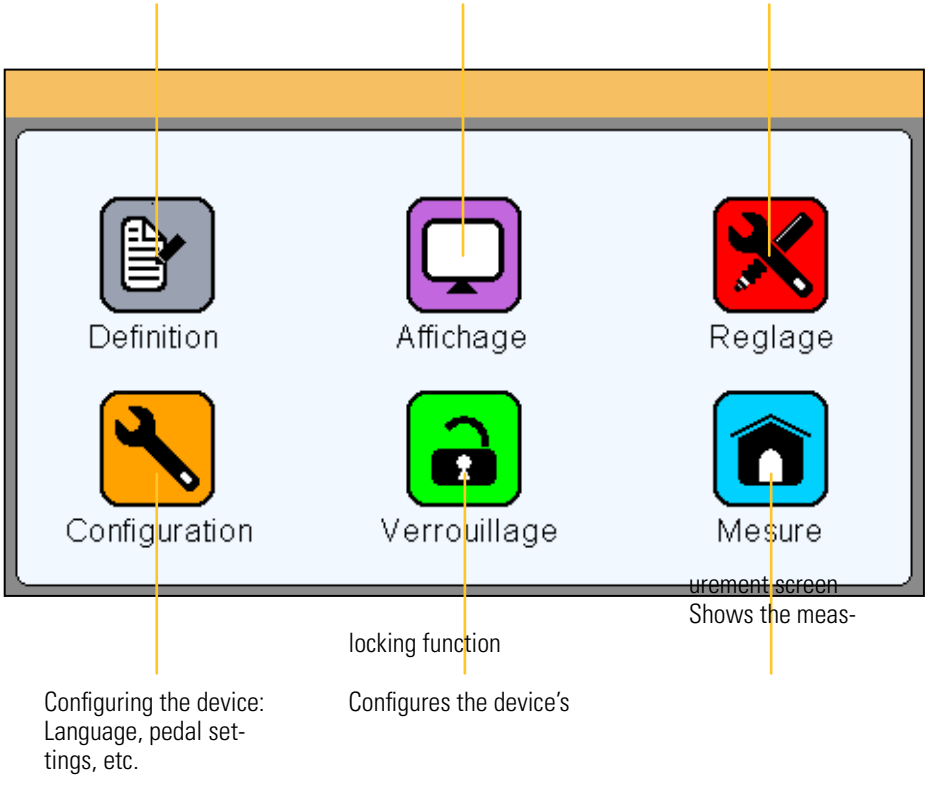


Configuring the device and the measurements

This chapter sets out the various windows that can be launched from the icon panel. As a reminder, the icon panel can be launched by tapping the appropriate button on the measurement screen.

You can fully configure your D70 (language, communication, etc.) from this screen. The measurement (precision, tolerance, etc.) can also be configured from this screen.

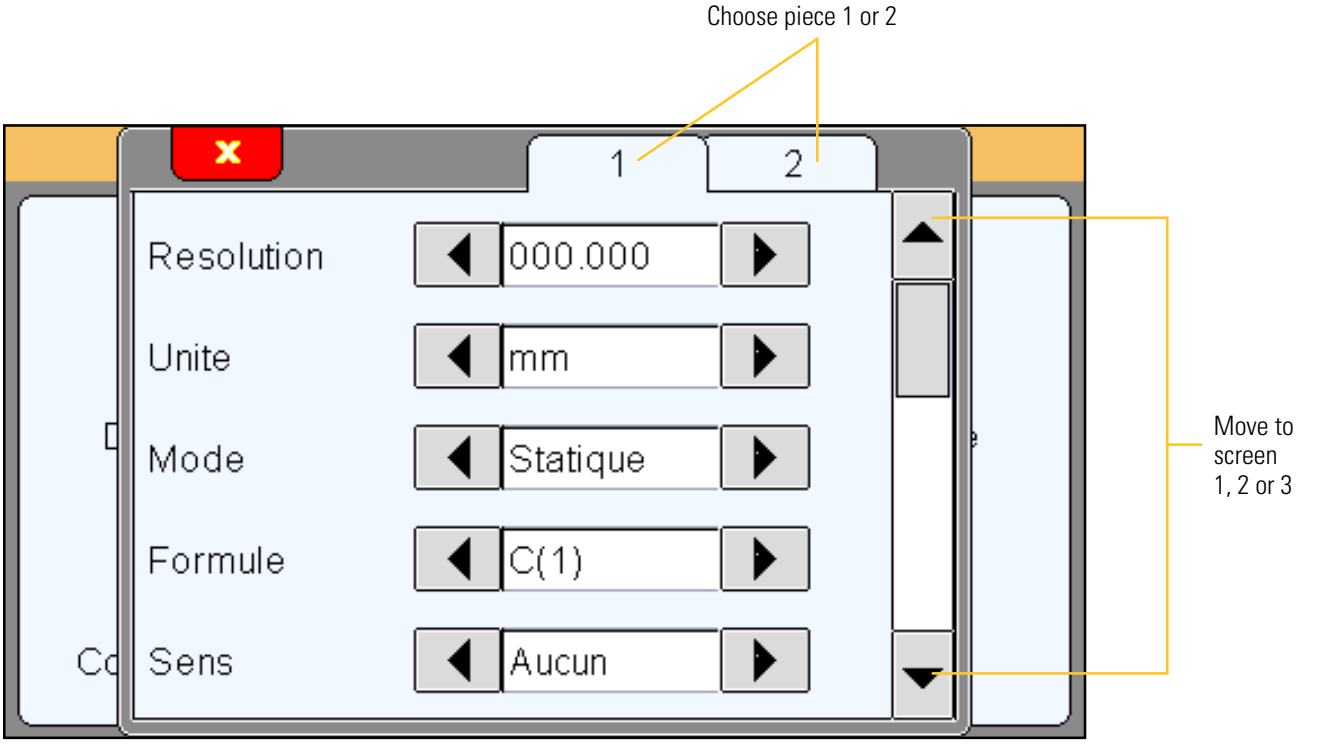
The following six sections describe the six icons that appear on this screen :



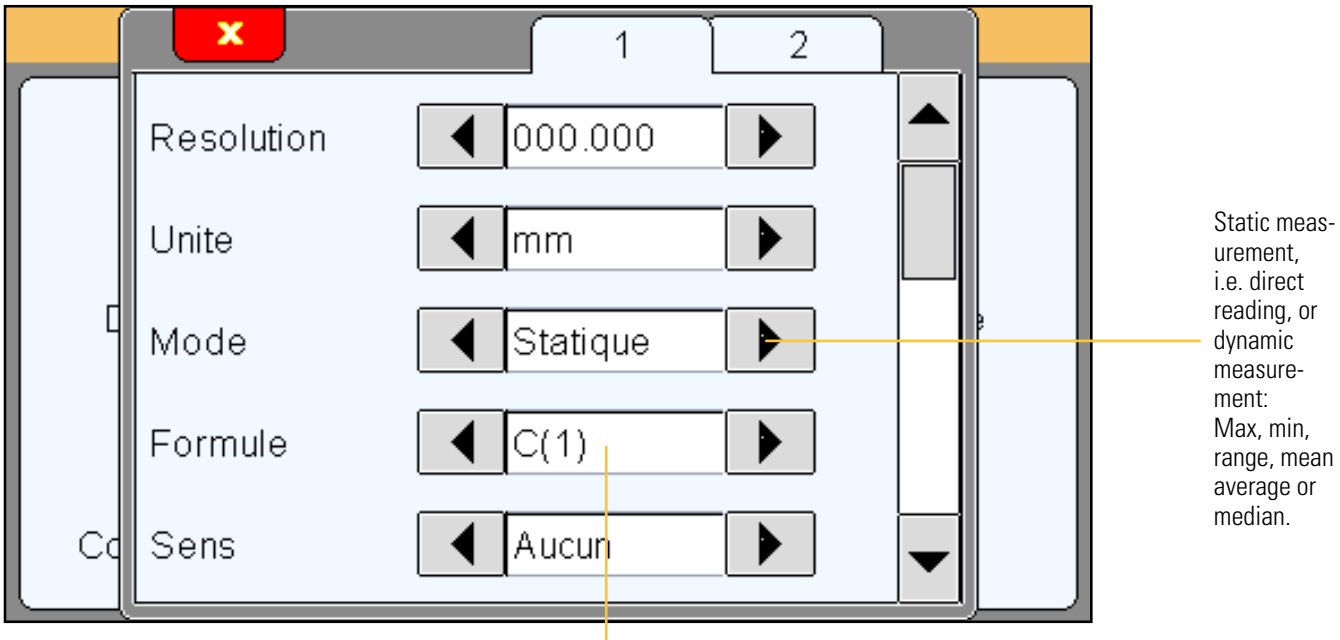
Definition

Tapping the « definition » icon launches the following window.
In this window, you can define the precision, unit, formula, tolerance, and benchmark of each of the two available configurations for the piece.

This window has two areas allowing you to configure two pieces, and three screens that you can access using the scroll bar on the right:



Area 1

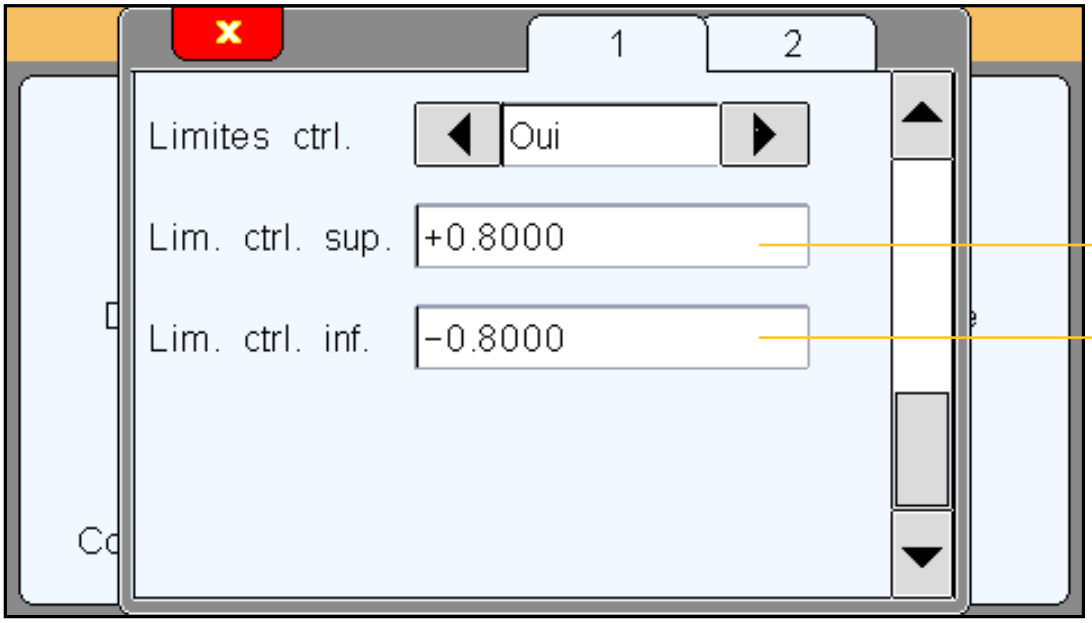


Choice of calculation formula C(1) / C(2) / C(1) + C(2) / C(1) - C(2) / -C(1) / -C(2) / -C(1) + C(2) --> C = sensor

You can apply a coefficient to each sensor from the «settings» menu

Area 2

You can apply or remove the test limits from this screen, and define them if required. The test limits are alarms that will alert the user if a tolerance limit is reached (marked in yellow on the bar charts displayed on the measurement screen).

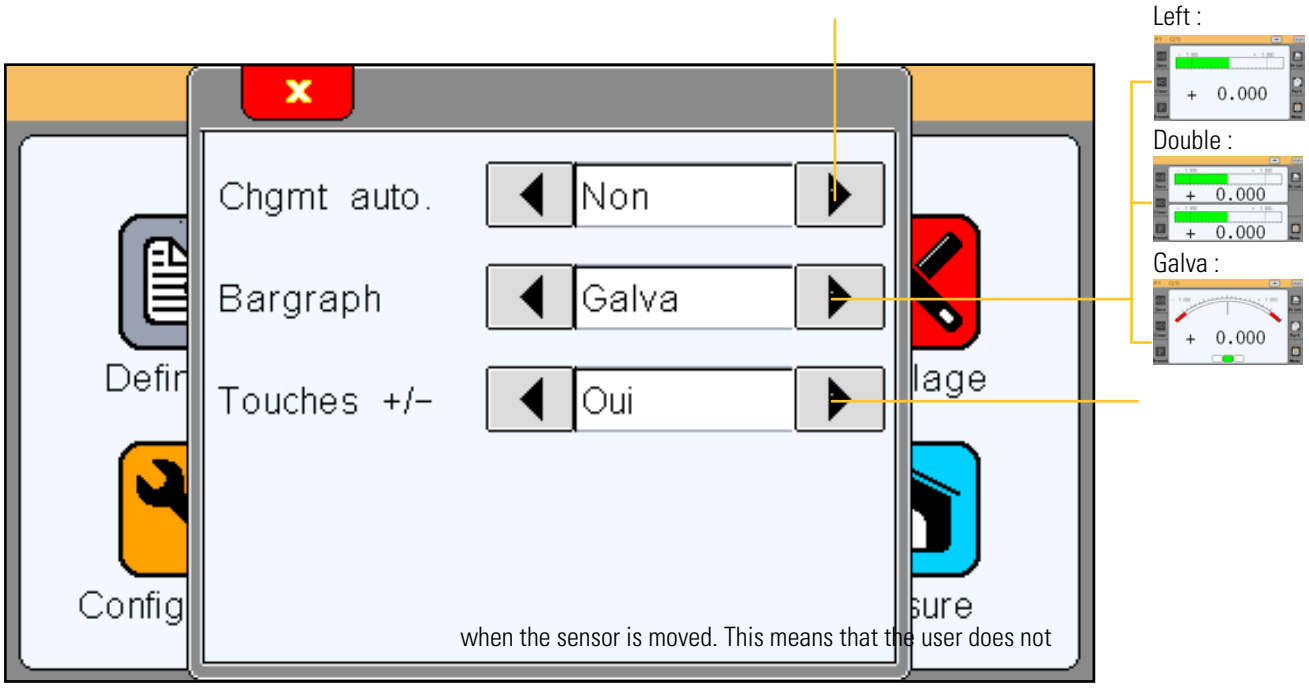


Display



Tapping the « **display** » launches the following window.
In this window, you can decide whether one or two measurements are shown on the screen, and how they are displayed (needle/galvanometer or bar chart).

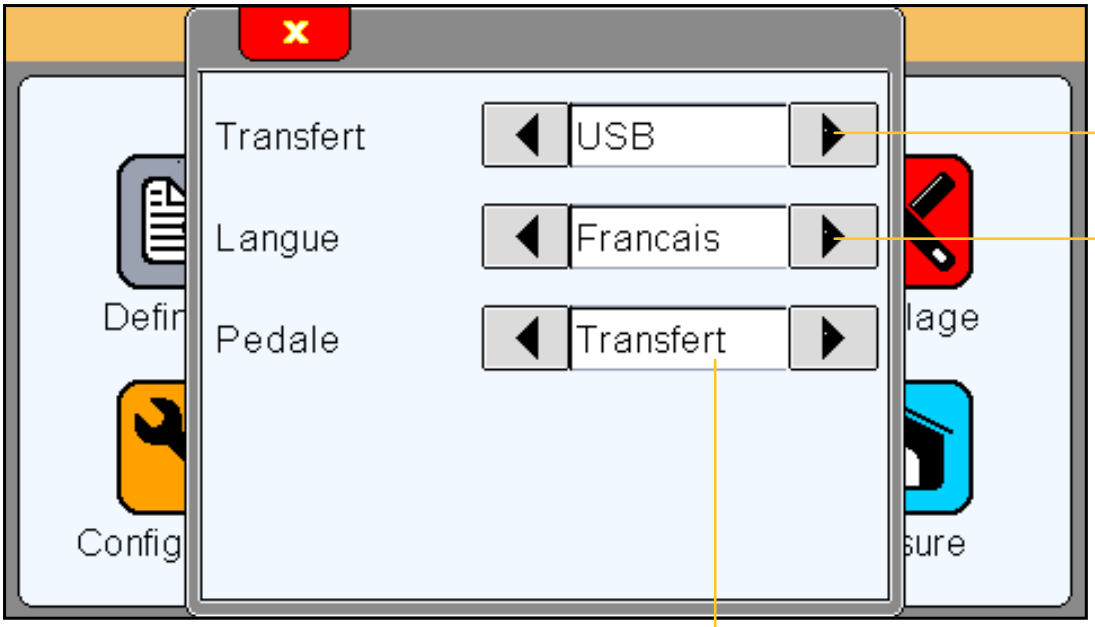
Automatic changing launches the corresponding programme



Configuration

Tapping the « **configuration** » icon launches the following window.

This window can be used to configure the communication settings for your D70.



Select means of communication: RS-232 or USB

Select language. Other languages may be added on request.

Pedal function:

- «Preset» benchmark
- «transfer»: allows you to transfer the meas-urements of the current test via t
- «range»: allows you to change the active piece (piece 1 or piece 2)
- «Start Dyn»: Start a dynamic measurement (min, max, etc.)
- «tare»: Set the value displayed to zero.

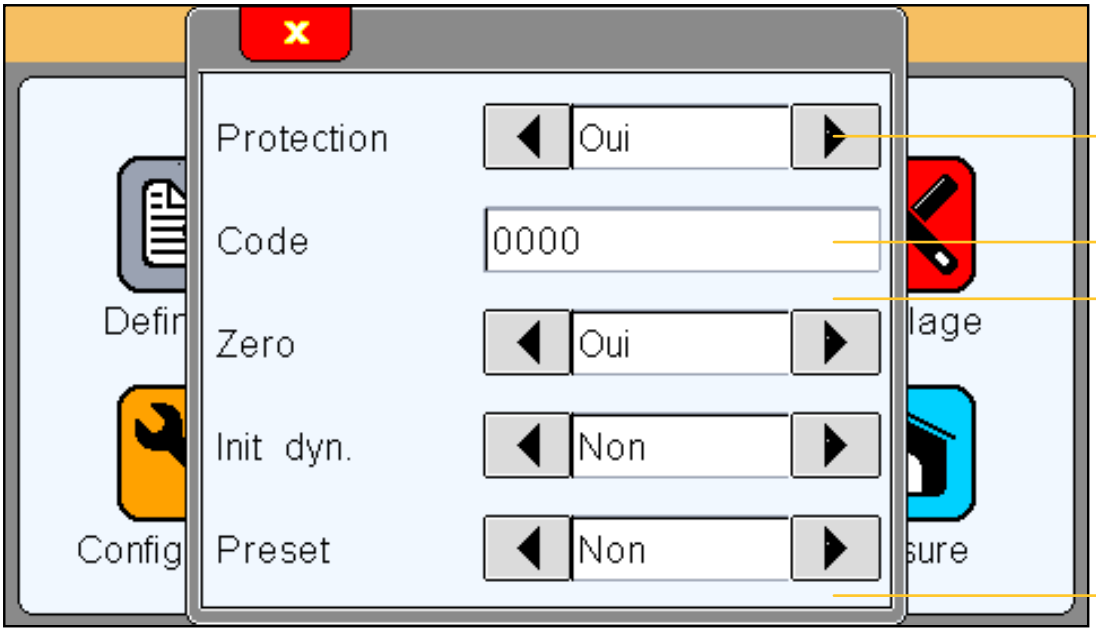
If you set the communication to USB, your D70 will be detected as a keyboard as soon as you connect it to a PC. There is no need to install a particular driver.

Locking

When you transfer the measurement, it will appear on your PC screen at the point where you have placed your cursor (in an Excel worksheet or elsewhere) just as if you had typed it in using a keyboard.

Tapping the « **locking** » icon launches the following window.

This window can be used to configure the communication settings for your D70.



Choosing «yes» means that a password will be required to access the icon panel. The default is

Allows the

user to hide the

Set password.

buttons from the

Measurement

measurement screen. We recommend that you only have the buttons that you need displayed on the measurement screen in order to keep the interface as uncluttered as

The D70 starts up on this screen

The measurement screen displays the values of the piece being tested. Galvanometer and bar chart displays mean that the value can be compared to tolerances entered using the definitions menu.

Tapping the « **measure** » icon launches the following window.

Please consult the «Measurement screen» section below for an overview of the measurement screen.

Measurement screen

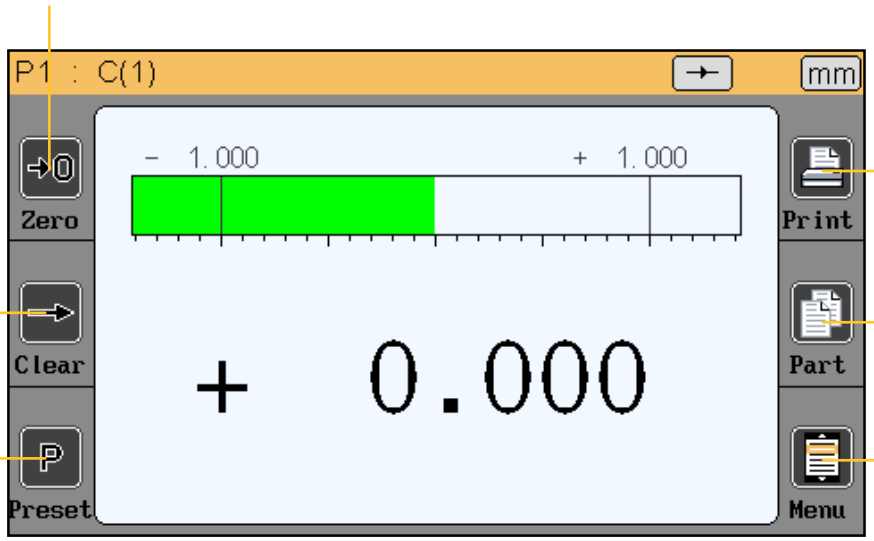
Functions of the sidebar buttons

(min, max, etc.)

ping this button



measurement



Transfers the measurement (RS-232 or USB)

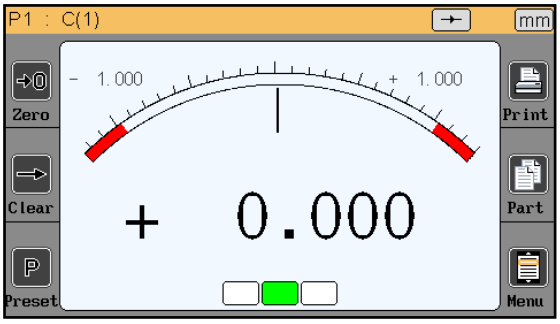
Start a dynamic

Manually changes the active piece (piece 1 or piece 2)

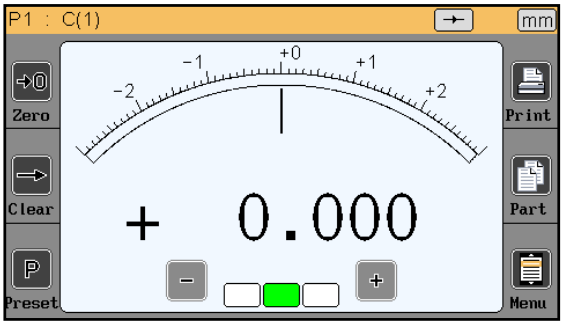
will set the value

Allows the user to access the icon panel and configure the device

displayed to the



Automatic

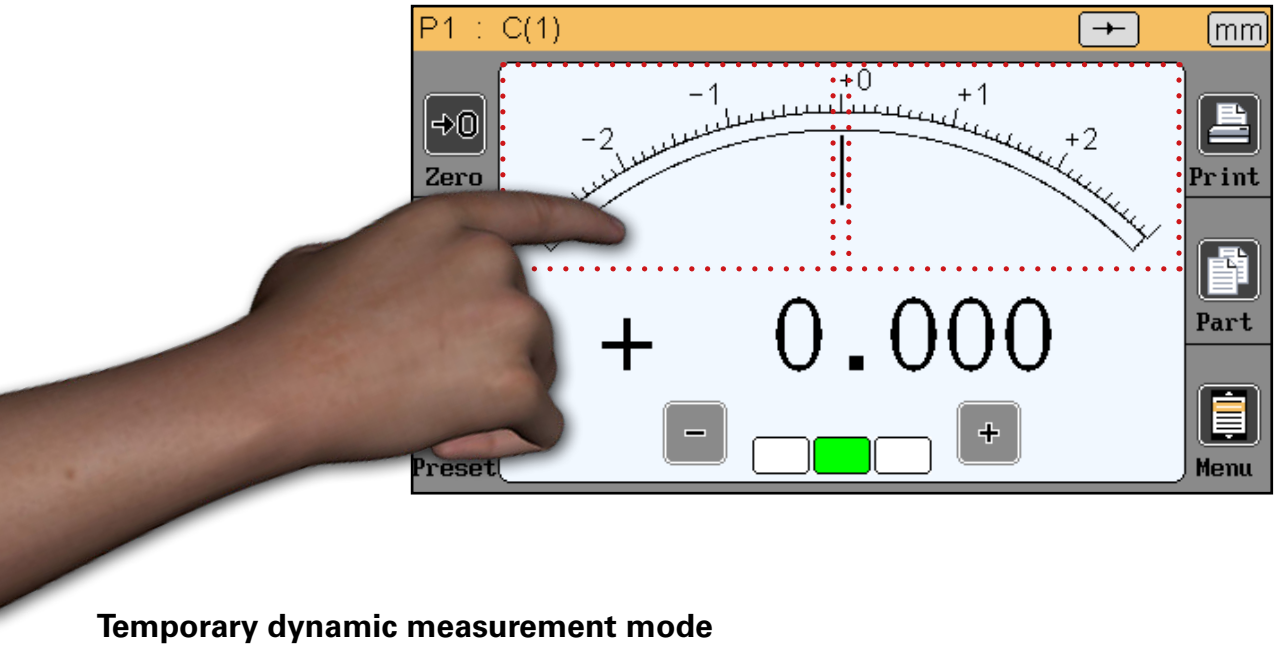


Manual

benchmark value

entered using the

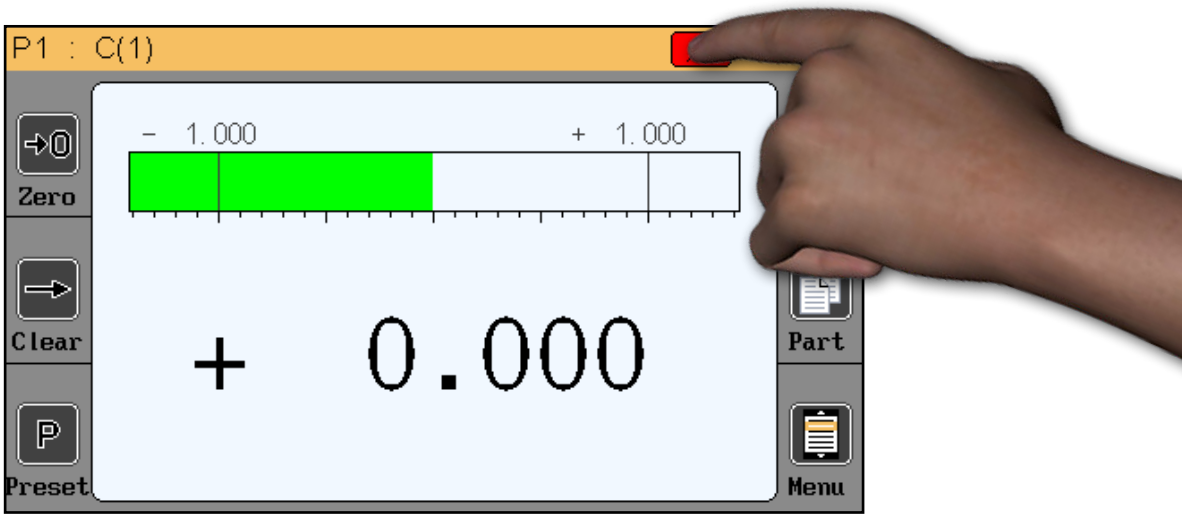
You can switch between the two modes by tapping the display areas within the red dots below:



Temporary dynamic measurement mode

As explained in section 5.1, the value is defined as «static» or «dynamic» (min, max, etc.)
If a value is set as static, it is still possible to temporarily switch to dynamic mode directly from the measurement screen.

Tap the measurement mode symbol to do this.



It cycles through:

Static measurement | Max | Min | Max-Min | Mean Average | Median Average

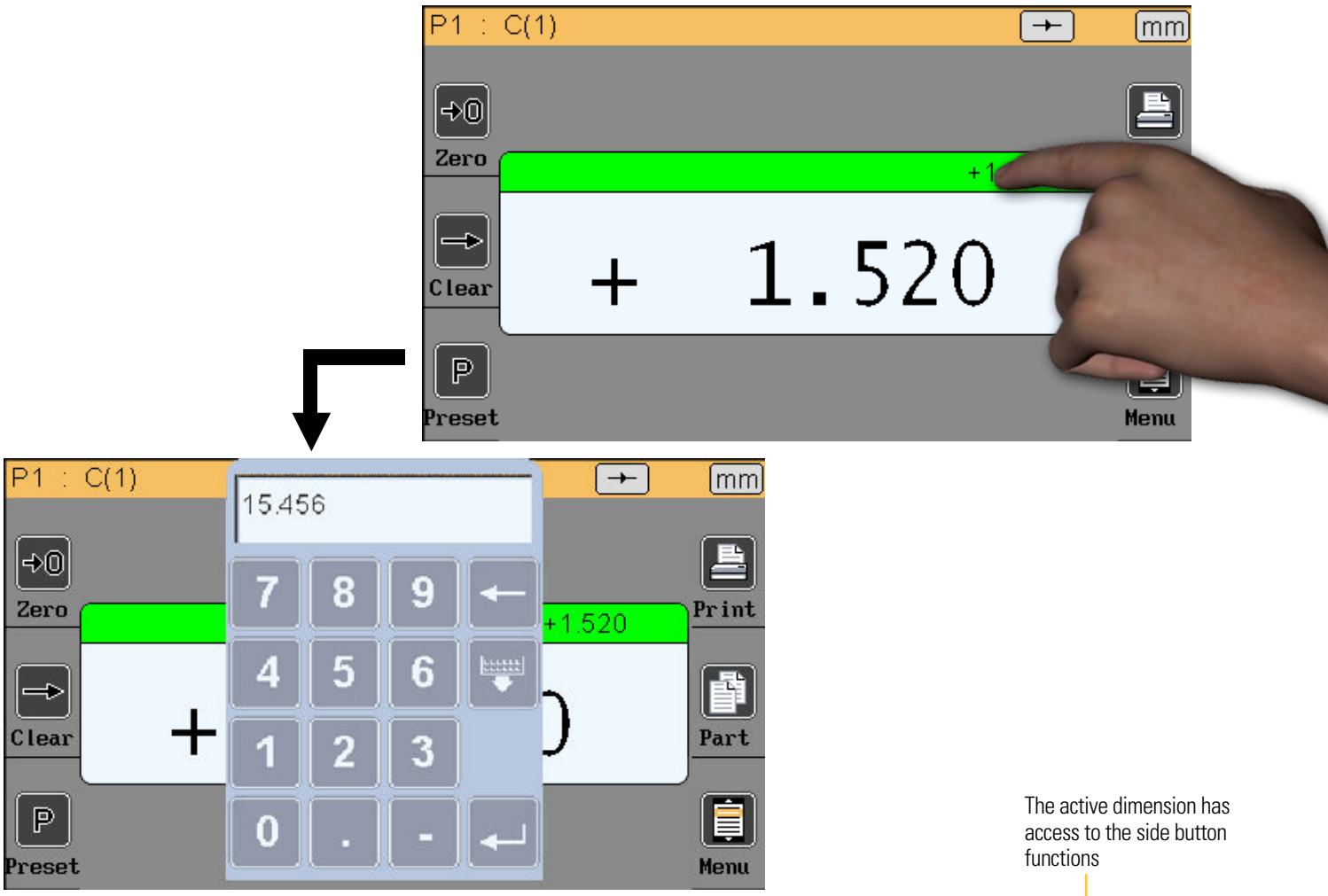
Once a dynamic measurement mode is selected, tap the «clear» button to launch the measurement, or use the pedal if this has been set to «Start dyn» (see the «Configuration» section).



Tolerance-free mode

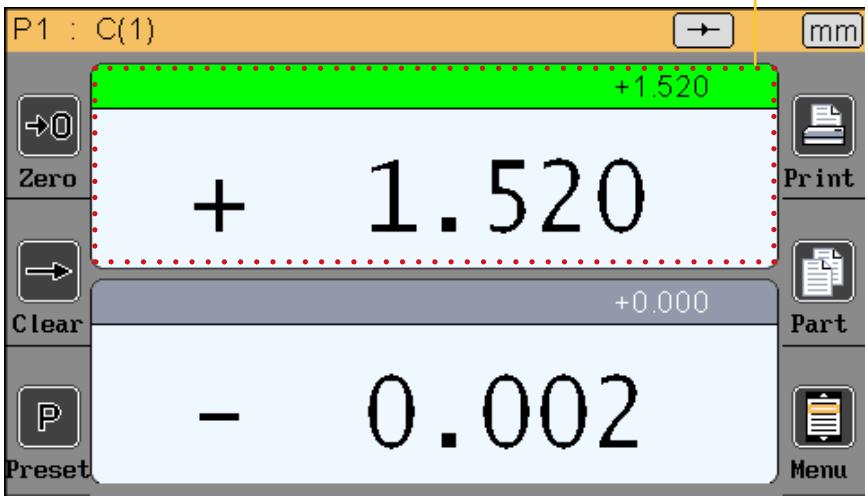
This mode is very well suited to Heidenhain type incremental sensors (for example Heidenhain MT101).
The tolerance-free mode allows only the numerical value to be displayed, without coloured tolerance indications.

In addition, it is possible to change the preset value (calibration) directly from the measurement screen. Press the value as shown on the image below and use the keyboard to enter the new value:



The active dimension has access to the side button functions

If dual mode is chosen, 2 dimensions vary, but only one is active. To select the active dimension just press it and the box banner becomes green.
The side buttons then apply only to the active dimension. In the example below the active dimension is the one that shows 1.520.



Communication protocol

The D70 uses the ASCII communications protocol in order to run and configure its functions.

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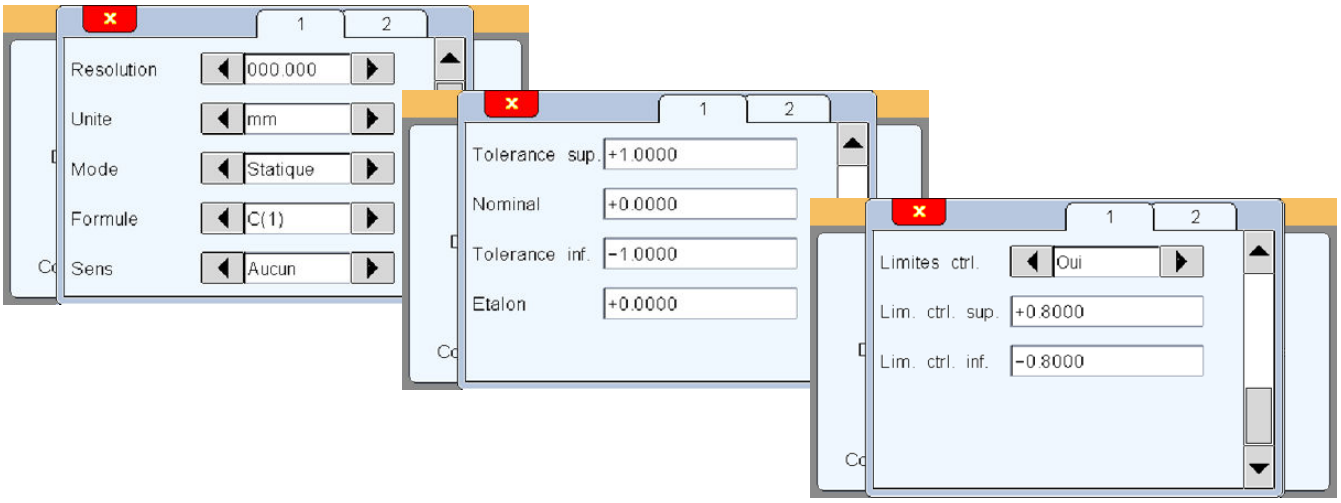
Commands

General details

All commands must terminate with a «CR» character (ASCII code 13). The commands can be send in group by separing them with a character «;» (max 500 characters). The display is refresh after the reception of the character «CR».

List of commands

DEFINITION window



«Definition» Window (commands by dimension with «n» = 1 or 2 (dimension number))

Item	Read command	Write command	Comment
Resolution	nRES?	nRES=x	x=1 à 5 (number of decimal places) x=0(mm) x=1 (inch) x=2 (µm)
Unit	nUNIT?	nUNIT=x	x=0 (static) x=1 (maxi) x=2 (mini) x=3 (maxi-mini) x=4 (mean) x=5 (median)
Dynamic mode	nDYN?	nDYN?=x	x=0 (static)
Formula	nFM?	nFM=x	x=0 (C1) x=1 (C2) x=2 (-C1) x=3 (-C2) x=4 (C1+C2) x=5 (C1-C2) x=6 (-C1+C2) x=7 (-C1-C2)

«Measurement screen» window			
Item	**Read command**	**Write command**	**Comment**
Zero		ZERO	Relative zero
Clear		CLR	Dynamic measurement
Preset		PRESET	Calibration
Print		?	
Part		G1 G2	Part 1 Part 2
Switch off		OFF	Switches the equipement off

Display calibration / Pairing with a probe

The D70 for inductive probes is delivered calibrated with the desired probe type.

For best results it is possible to recalibrate the display with your reference sensor to have homogeneity in your set of displays or to pair a sensor and display assembly.

Attention: After this procedure, the original calibration of your D70 will be irretrievably lost and replaced by the values from your operation. This function should therefore be used with care.

For this, follow the procedure below:

1. Switch off the D70
2. Switch on the D70
3. When the start screen appers, press Sylvac Logo
4. A desktop with five icons appears, press «Calibration».
5. The following screen appears



The probe position is displayed:
- Position the value at zero
- Place a 1mm gauge block under the probe (or move the probe 1mm using a precision movement system).
- Press OK
- The D70 is now recalibrated

Press the Home icon to return to the standard D70 menu.

Linearisation / Correction table

The D70 allows probe linearity correction by entering a correction table containing up to 25 points. (not available on version H)

This allows a significant improvement in the performance of the related probes.

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For this, follow the procedure below:

1. Switch off the D70.
2. Switch on the D70.
3. When the start screen appers, press Sylvac Logo.



4. A desktop with tree icons appears, press «Factory», password 4321.
5. The following screen appears, press on «Linearity».



To activate the linearisation function, choose «Enabled» = «Yes».
Then you can enter up to 25 correction points.
For this go to a position corresponding to a point, the uncorrected probe value will be displayed in the «Probe» box. Then enter the real value in the «Real position» box.

To finish, use the white cross to close the window, then press the Home icon to return to the standard D70 menu.

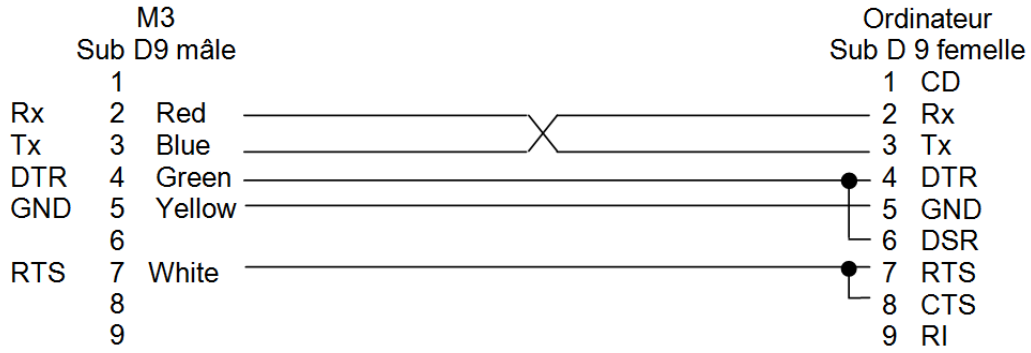


Firmware update

The D70 internal software can be updated.

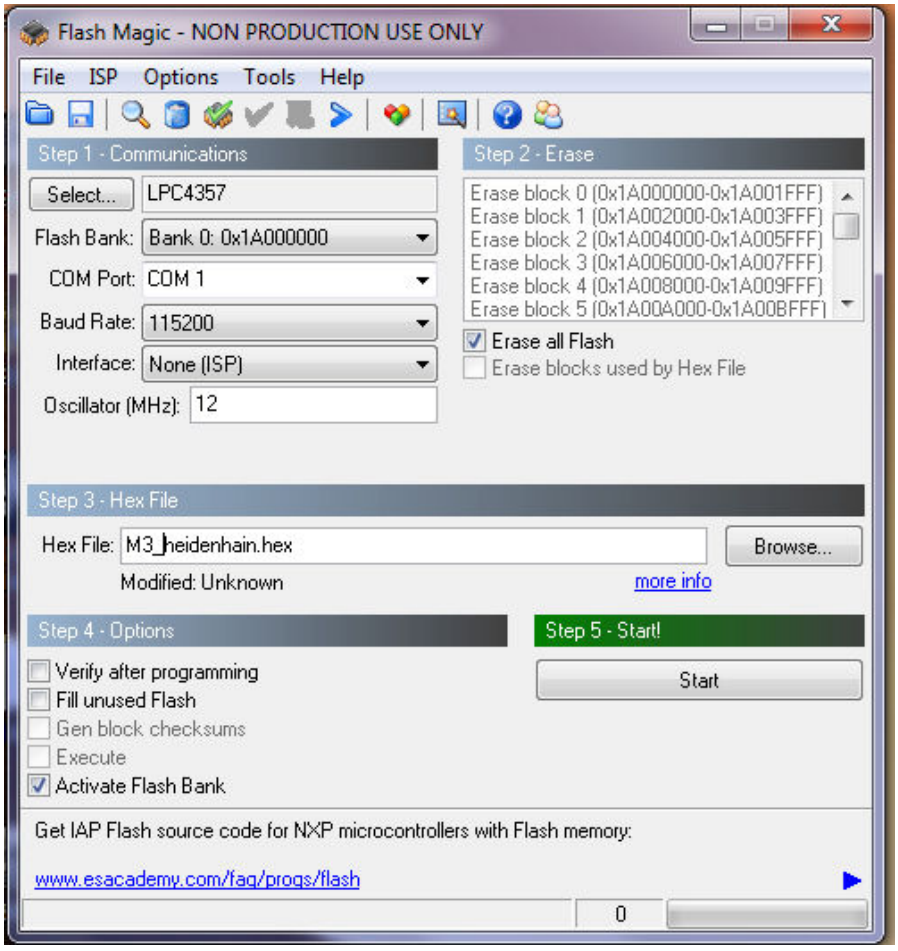
Updating requires an RS232 cable (ref. 926.5606 for D70S and ref 804.2201 for D70H/I) . It is possible to use an RS232/USB converter if your PC is not equipped with a serial port.

If you do not have an RS232 cable, you can connect it as in this diagram:



Updating the firmware requires the «flash magic» software, which can be downloaded free of charge from this address: www.flashmagictools.com

After installation, configure the software as follows :



Procedure

1 – Connect the D70 to the computer with the cable USB/RS232.
2 – Switch on the D70.
3 – Configure the flash magic software according to the image above.
4 – Click on "Start".

Updating will take between 2 and 5 minutes depending on the speed chosen. During updating the screen is locked.

5- The D70 restarts automatically when the procedure is completed.

6- Reinitialise the D70 by following the procedure described before.

Restoring factory settings

This setting allows you to revert the D70 to default settings.

Note: This function will reset all of the parameters and settings of your D70. All tolerances, benchmark values, and sensor settings will be lost.

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To do this, proceed as follows:

1. Turn off the D70
2. Switch on the D70
3. When the start screen appears, tap the Sylvac logo
4. A panel with 4 icons will appear
5. Tap the «return to factory settings» button
6. Confirm with YES or cancel with NO
7. Tap the «Home» icon to return to the measurement screen



Applications



Sylvac capacitive probes connected to a D70S



Sylvac inductive probes connected to a D70i



Heidenhain probes connected to a D70H

Can be used to measure thickness, flatness, diameter, length, boring, recesses or positioning.

CERTIFICATE OF CONFORMITY
Sylvac certifies that this instrument has been manufactured in accordance with our Quality Standard and tested with reference to masters of certified traceability by the Swiss Federal Office of Metrology.

CERTIFICAT DE CONFORMITE
Sylvac certifie que cet instrument a été fabriqué et contrôlé selon ses normes de Qualité et en référence avec des étalons dont la traçabilité est reconnue par l'office fédéral suisse de métrologie.

QUALITÄTSZEUGNIS
Sylvac bestätigt, dass dieses Gerät gemäss seinen internen Qualitätsnormen hergestellt wurde und mittels Normalen mit anerkannter Rückverfolgbarkeit, kalibriert durch das Schweizerische Bundesamt für Metrologie, geprüft worden ist.

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EU DECLARATION OF CONFORMITY (DoC)

We, Sylvac SA, hereby declare under our sole responsibility that the product

Name	D70H Display unit
Description	Display unit for Heidenhain probes
Part Numbers	804-2072

has been submitted to a conformity assessment and fulfils the essential requirements of the following European directives/re.

2001/95/EU	General product safety
2014/30/EU	EMC
2011/65/EU & 2015/863/EU	RoHS

and complies with the following harmonized standards or other normative documents

EN 61326-1:2021	Electrical equipment for measurement, control and laboratory use – EMC requirements
EN IEC 63000:2018	Technical documentation for the assessment of electrical and electronic, products with respect to the restriction of hazardous substances

Person authorized to compile the technical file and issue the declaration of conformity: Eric Schnyder

Place and date of issue	Yverdon-Les-Bains, September 28, 2023
Name (position)	Eric Schnyder (CEO)
Signature	