sylvac

**Display unit**
Unité d'affichage
**Anzeige Einheit**

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# D50S
# D50S-PRO
# D50S-FAST




**INSTRUCTIONS**
**MODE D'EMPLOI**
**BEDIENUNGSANLEITUNG**

## Summary


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## 1. General description

The D50S/D50S-PRO unit displays the absolute or real displacement of Sylvac probes. Highest resolution is 0.1µm. Numerous integrated functions will resolve most metrological problems and ease of use. It is possible to connect and display up to 2 Sylvac probes

### 1.1. Selection keys




Direct conversion mm/in or in/mm




Choice of the resolution
0.001 – 0.0001 (-0.0005) mm / 0.0001 - 0.00001 (-0.00005) ‘’




Choice of measuring direction
+ / -




Choice of measuring mode
Rel (relative) or Abs (absolute)

### 1.2. Zero setting or preset value setting key




Quick pressure : activate the zero setting or the value of memorized Preset.

Long pressure : activate the preset input display.

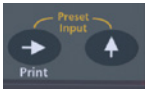
Advise: When measuring, it is recommended to check regularly the reference (zero or pre-selected value)

### 1.3. Print key




Quick pressure : Send the displayed value on RS-232-C port.

### 1.4. Introduction of preset value keys




Press → move the selection of a digit from left to right.

Press ↑ change the digit from 1 to 9. The selection of the sign +/- must be done in the first digit of the display. (left)

To memorize the value, press the preset key.

* maximum value of preset : +/- 400mm/15”

### 1.5. FCT key




**Function Cha 1**
Basic function : The unit display the value of probe n :1

**Function Cha 2**
Quick pressure : The unit display the value of probe n :1

**Function Cha 1-2**
Quick pressure : The unit display the value of probes n :1-2 (differential)

**Fonction Cha 1+2**
Quick pressure : The unit display the value of probes n :1 +2 (sum)

* The display parameters (unit, resolution, etc..) are independent for Cha 1 and Cha 2. The functions differential and sum use the parameters of Cha 1.

### 1.6. Keyboard locking keys

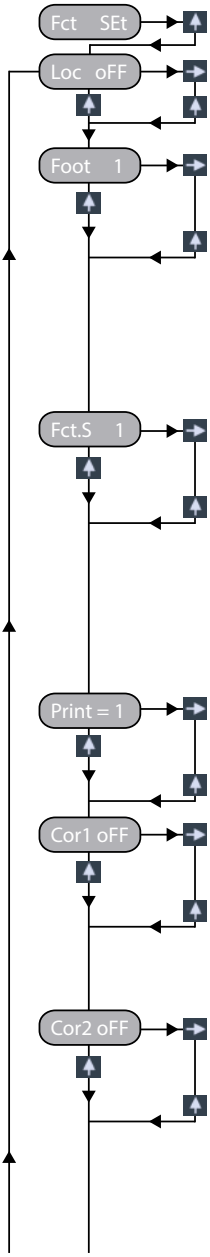



Long pressure : ~4 s. on one of these keys locks it’s function and display « Loc on ».
To unlock this locked function, press the key until the display show « Loc oFF »
See also General keyboard unlocking in chapter Setup of the unit.
See also General keyboard unlocking with KEY Remote command.

## 2. Setup of the unit




Press the Fct key when switching ON the unit. (simultaneously)




LOC OFF = Activated keyboard
LOC ON = Deactivated keyboard
Only Send data, Preset and pedal functions keep available.

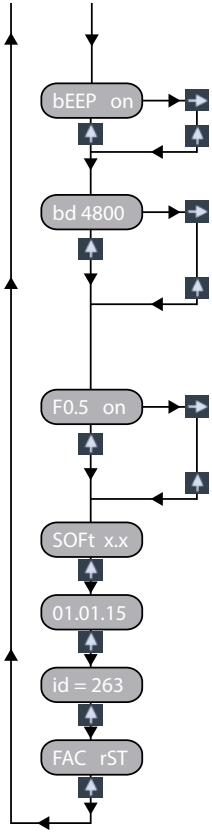
<u>Function of the external contact</u>
Foot 1 : Print
Foot 2 : Zero setting
Foot 3 : Preset setting
Foot 4 : Change of channel
Foot 5 : Print + change of channel
Foot 6 : Preset then Print

<u>Selection of the functions</u>
Fct. S 1 : Function 1 only
Fct.S 2 : Function 2 only
Fct.S 3 : Function 3 only
Fct.S 4 : Function 4 only
Fct.S 12 : Functions 1 and 2 only
Fct.S 34 : Functions 3 and 4 only
Fct.S 14 : All functions

<u>Selection of the data sending (D50S-FAST)</u>
Print = 1 : 1 data per request
Print = 2 : 2 datas per request for the functions 3 and 4

<u>D50S PRO</u>
Cor1 on : Enables the measuring correction (point per point) of probe Nb1
Cor1 oFF : Disables the measuring correction (point per point) of probe Nb1

<u>D50S PRO</u>
Cor2 on : Enables the measuring correction (point per point) of probe Nb2
Cor2 oFF : Disables the measuring correction (point per point) of probe Nb2




bEEP on : Disables the buzzer
bEEP oFF : Enables the buzzer

Selection of the baud rate
bd4800 : 4800 bits/s
bd9600 : 9600 bits/s
bd19200 : 19200 bits/s
bd38400 : 38400 bits/s

Selection of the resolution of display
F0.5 on : the resolution 0.5µm, 0.00005" is enabled
F0.5 off : the resolution 0.5µm, 0.00005" is disabled

Software version

Date of software version

Identification number of unit.

Unit Reset (factory parameters, except calibration. See chapter Calibrations)




During the setup, the pressure of Fct key leaves this mode. (in all sub-menus)

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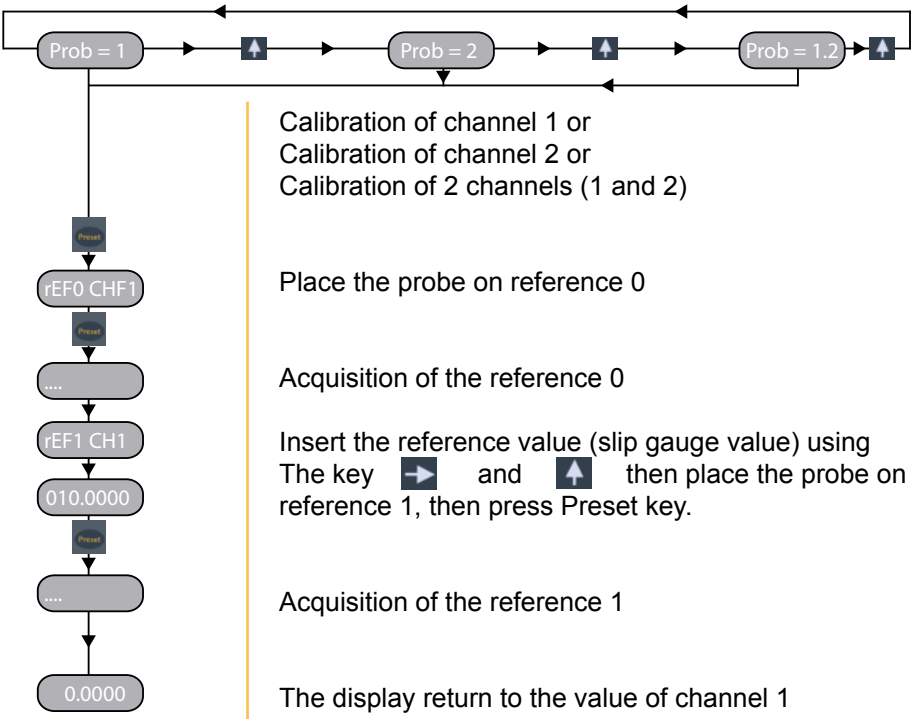
## 3. Calibrations

### 3.1. Calibration of the unit

The calibration of the unit consists in entering 2 reference points on the probe's measuring range and specify the distance between them. This is to be repeated for both channels if required. The unit is factory calibrated with a probe master. If the unit is not calibrated, the calibrated function is automatically called when powering the unit.




For a new calibration, press Preset key when switching ON the unit. (simultaneously).




Calibration of channel 1 or
Calibration of channel 2 or
Calibration of 2 channels (1 and 2)

Place the probe on reference 0

Acquisition of the reference 0

Insert the reference value (slip gauge value) using The key → and ↑ then place the probe on reference 1, then press Preset key.

Acquisition of the reference 1

The display return to the value of channel 1

An error during calibration displays the message <rEF1 Err> or <rEF2 Err> for channel 2

If a channel is not calibrated, the display show :

**CAL 1 Err**
**CAL 2 Err**
**CAL Err** according to the active current function

If a probe is not connected, the display show :

**no Prob 1**
**no Prob 2**
**no Prob** according to the active current function

If a point per point correction is activated while calibrating the unit, it is deactivated but not erased. By pressing the Preset key when the channel is in absolute mode (Abs) the display briefly indicates Abs.

### 3.2. Calibration for diameter measurement

The unit can be calibrated to measure internal diameters. 2 setting rings with different sizes are required to perform the calibration. Use the smallest ring as Reference 0 and the biggest ring as Reference 1. The value to insert corresponds to the difference between both diameters. Once the calibration done, insert the value of the small diameter in the Preset menu.

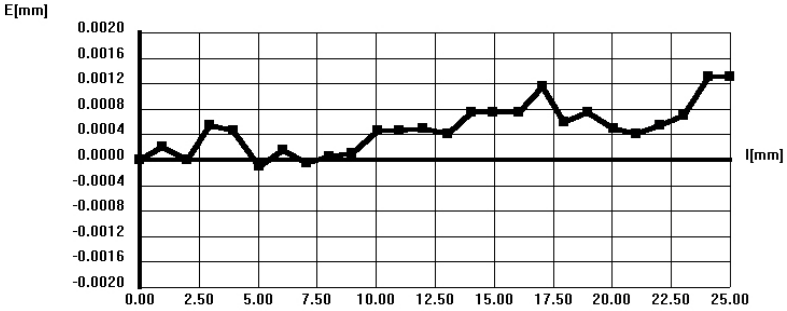


### 3.3. Matching of a probe and a unit (option available only on D50S PRO)

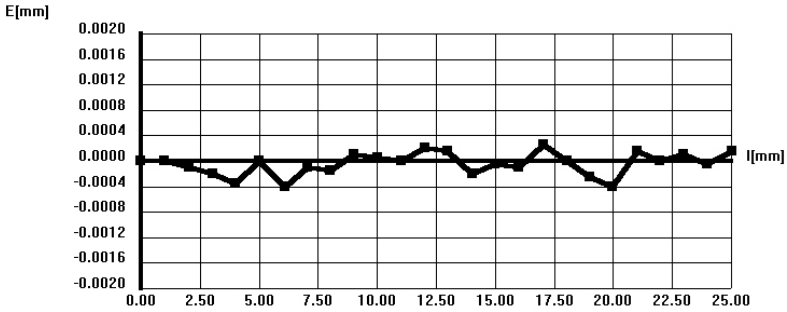
To increase the measurement's accuracy, it's possible to match each channel of the unit with its corresponding probe. This operation is independant of the calibration. It defines a correction curve of maximum 26 points on the probe's measuring range and specifies a correction for each point. This is to be repeated for both channels if required.

Exemple of correction

1) Probe P25 with D50S-PRO without correction —> max error 1.4 µm




2) Same instruments, but with correction of 10 points (every 2.5 mm—> max. error 0.7 µm






The insertion or the modification of the points is to be made on the channel active at this time, by the RS232-C Com (See corresponding remote commands COR, LCOR and NCOR). Once calibrated, the led COR is highlighted. By simultaneous measurement with 2 probes (Cha 1-2 ou Cha 1+2) the LED is activated only if both channels have a correction.

The entry of the points has to comply with the following conditions:

- The numbering of the points must be continuous and must start from the point number 0 or 1 (if the point 0 is not introduced, it will automatically be created with a value at zero).
- After each point, the plunger of the probe must always be moved from the outside
- The correction value is limited to 1mm or 0.1 inch.
- The difference of correction between 2 consecutive points is limited to the half of the distance between these 2 points. Example: for 2 points with 1mm distance from each other, the difference of correction between these 2 points cannot be bigger than 0.5mm
- The unit must be switched on the channel 1 or 2 (key Fct).
- The unit must be in high resolution mode !

If one of the above condition is not observed, the correction point will not be saved and the error message Err5 (function not allowed) will be shown.

How to introduce a point by point correction :

1. Prepare a set of gauge blocks or an appropriate calibration instrument.
2. Set the unit into the following modes: High resolution (key Resol) Positive measuring direction (key +/-) Relative measuring mode (key Rel/Abs)
3. Set the probe to a reference value and zero it (key Preset). This value corresponds to the pre-travel of the probe (0.8mm).
4. Set the probe's plunger on the first gauge block or calibration value.
5. Read the displayed value.
6. Enter the first correction value with the remote command COR 1/ +/-x. yyyyy. The value to enter corresponds to the value of the gauge block less the readen value on the display (take the sign + or – into account).
7. Repeat the points 4 to 6 for the other gauge blocks or calibration values.
8. After the entering of the last point, activate the correction curve with the remote command COR ON.

The SYL-Calibre software facilitates the introduction of the point by point corrections (available on request)

## 4. Test of memory




Run a test of memory.

Display FLASH……..
….. PASSEd if successful test.

If display show MEM 0 Err,
The unit is still ready to measure correctly but must quickly be checked by a technical inspection.

If display show MEM 1 Err,
The unit is not ready any more to measure

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## 5. Codes for remote commands

Each retro-command must be followed by one «CR» (Carriage Return)

| Code | Function |
|---|---|
| ? | Sends the displayed value (1..4) |
| 'A' | |
| ABS | Actives the Abs mode of the indicated channel |
| 'B' | |
| BAUD 4800 | Actives the baud rate at 4800bits/s |
| BAUD 9600 | Actives the baud rate at 9600bits/s |
| BAUD 19200 | Actives the baud rate at 19200bits/s |
| BAUD 38400 | Actives the baud rate at 38400bits/s |
| BAUD ? | Sends the selected baud rate |
| BEEP ? | Sends the status of the buzzer |
| BEEP 0 or OFF | Disables the buzzer |
| BEEP 1 or ON | Enables the buzzer |
| 'C' | |
| CHA+ | Selects positive measuring direction of the indicated channel. |
| CHA- | Selects negative measuring direction of the indicated channel. |
| CHA ? | Sends the measuring direction of the indicated channel (+/-) |
| CHA 0 OR OFF | Lock the function +/- |

| Code | Function |
|---|---|
| CHA 1 or ON | Unlock the function +/- |
| COR ? | Sends the status of the point per point correction of the indicated channel |
| COR PP ? | Sends the status of one correction point of the indicated channel |
| COR RST | Reset the measuring correction |
| COR 0 or OFF | Disables the measuring correction |
| COR 1 or ON | Enables the measuring correction (indicated by a point on the last digit of the display) |
| COR PP / +/-x.yyyyyy | Insert or modify a point of the correction. PP=Point number [0…25]. Max correction : 1.0mm/0.1'' |
| 'E' | |
| EXT1 | Actives the external contact 1 : Print |
| EXT2 | Actives the external contact 2 : Zero setting |
| EXT3 | Actives the external contact 3 : Preset |
| EXT4 | Actives the external contact 4 : Change of channel |
| EXT5 | Actives the external contact 5 : Print + change of channel |
| EXT51 | Actives the external contact 5 : Print + change to channel 1 |
| EXT52 | Actives the external contact 5 : Print + change to channel 2 |
| EXT53 | Actives the external contact 5 : Print + change to channels 1 and 2 |
| EXT54 | Actives the external contact 5 : Print + change to channels 1 to 4 |
| EXT6 | Actives the external contact 6 : Preset then Print |
| EXT ? | Sends the external contact mode |
| 'F' | |
| FAC RST | General Reset (factory parameters) , NUM=263 |
| FCT 1 | Actives channel 1 |
| FCT 2 | Actives channel 2 |
| FCT 3 | Actives channel 1-2 (difference) |
| FCT 4 | Actives channel 1+2 (sum) |
| FCT? | Sends the function used |
| FCT 0 or OFF | Lock the function Fct |
| FCT ON | Unlock the function Fct |
| FCTS 1 | Function 1 only |
| FCTS 2 | Function 2 only |
| FCTS 3 | Function 3 only |
| FCTS 4 | Function 4 only |
| FCTS 12 | Functions 1 and 2 only |
| FCTS 34 | Functions 3 and 4 only |
| FCTS 14 | All functions |

| Code | Function |
|---|---|
| FCTS ? | Sends the selected functions |
| 'I' | |
| IDE or ID? | Sends the instrument identification (SY263) |
| ID | Sends the instrument identification (SYL263) |
| IN | Actives the Inch unit of the indicated channel |
| 'K' | |
| KEY0 or OFF | Lock the keyboard (except Send data and Send data using pedal). Command not stored. |
| KEY1 or ON | Unlock the keyboard |
| KEY? | Sends the keyboard status |
| 'L' | |
| LCAL? | Sends the date of the last calibration |
| LCAL dd.mm.yy | Sets the date of the last calibration |
| LCOR? | Sends the date of the last measuring correction |
| LCOR dd.mm.yy | Sets the date of the last measuring correction |
| 'M' | |
| MM | Actives the millimeter unit of the indicated channel |
| MOD? | Sends the active mode (ABS or REL) |
| MOD 0 or OFF | Lock the function ABS or REL |
| MOD 1 or ON | Unlock the function ABS or REL |
| 'N' | |
| NCAL? | Sends the date of the next calibration |
| NCAL dd.mm.yy | Sets the date of the next calibration |
| NCOR? | Sends the date of the next measuring correction |
| NCOR dd.mm.yy | Sets the date of the next measuring correction |
| NUM? | Sends the instrument number |
| NUM XXXX | Modify the instrument number (max. 10 characters) |
| 'O' | |
| OUT 0 or OFF | Disables automatic data transmission |
| OUT 1 or ON | Enables automatic data transmission |
| 'P' | |
| PRE OF PRESET | Actives the memorized preset value |
| PRE? | Sends the preset value of the active function (1..4) |
| PRE+/-xxx.yyyyyy | Insert the preset value of active channel (1 or 2). Max 400mm/15'' |
| PRE OFF | Lock the preset function |
| PRE ON | Unlock the preset function |
| PRI or P | Sends the displayed value (1..4) |

| Code | Function |
|---|---|
| PRI 0 or OFF | Lock PRINT 1 the Print function |
| PRI 1 or ON | Unlock the function Print |
| PRINT 1 | Sends 1 data per request [1)] |
| PRINT 2 | Sends 2 datas per request for the function 3 and 4 [1)] |
| PRINT? | Sends the data status [1)] |
| 'R' | |
| REL | Actives the relative mode on current channel (1 or 2) |
| RES05 | Actives the resolution (0.5µm, 0.00005'') on current channel |
| RES05 0 or OFF | Disables the function 0.5µm, 0.00005'' |
| RES05 1 or on | Enables the functions 0.5µm, 0.00005'' |
| RES1 | Actives the resolution (0.0001mm, 0.00001'') on current channel |
| RES2 | Actives the resolution (0.001mm, 0.0001'' ) on current channel |
| RES3 | Actives the resolution (0.01mm, 0.001'') on current channel |
| RES4 | Actives the resolution (0.1mm, 0.01'') on current channel |
| RES? | Sends the resolution of current channel (1 or 2) |
| RES 0 or OFF | Lock the function Resol |
| RES ON | Unlock the function Resol |
| RST | Reset the unit (customer parameters) |
| 'S' | |
| SET? | Sends the configuration of the unit for the current channel. 1 or 2 (measuring unit, Resolution, Direction, Rel/Abs, locked display and keyboard status) |
| SN? | Sends the serial number of the unit (fixed parameter) |
| STO 0 or OFF | Unlock the display |
| STO 1 or ON | Lock the display |
| STO ? | Print out the display status |
| SYS RST | Reset the unit (customer parameters) |
| 'U' | |
| UNI? | Sends the current unit mode (mm or '') |
| UNI 0 or OFF | Lock the Unit function |
| UNI 1 or ON | Unlock the Unit function |
| 'V' | |
| VER | Sends the version and date of software (Vx.yyc dd.mm.yy) |

[1)] Available only on D50S-FAST

## 5.1. RS 232 messages of transmission errors

| Code | Display | Type of error |
|---|---|---|
| ERR0 | 'fct oFF' | Command not executed, deactivated function |
| ERR1 | 'rS Err' | Parity error |
| ERR2 | 'rS codE' | Unknown format |
| ERR3 | 'rS t.out' | Timeout |
| ERR4 | 'rS FULL' | Capacity Overflow, more than 200 characters without CR |
| ERR5 | 'no Func' | Command not executed, unauthorized function. |
| ERR6 | 'rS orun' | Overrun error |
| ERR7 | 'rS Err' | Frame error |
| ERR8 | 'rS Err' | Stopped transmission error |
| ERRA | 'MEMO Err' | Not critical error of Flash memory |
| ERRB | 'MEM1 Err' | Critical error of Flash memory, requires a key-board acknowledge. |
| P1 ERR | 'no Prob1' | Probe 1 not connected |
| P2 ERR | 'no Prob2' | Probe 2 not connected |
| P12 ERR | 'no Prob' | Probes 1 and 2 not connected |

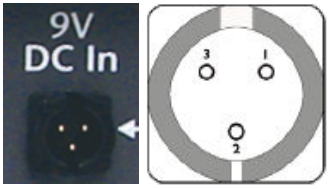
## 5.2. RS 232 parameters of the unit

| | |
|---|---|
| Baud rate | 4800, 9600, 19200 or 38400 (transmission speed) |
| Parity | even |
| Data Bits | 7 |
| Stop bits | 2 |
| Flow Control | None |

## 6. Functions of connectors (rear panel)

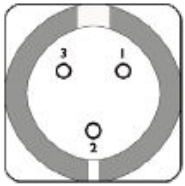



ON / OFF switch

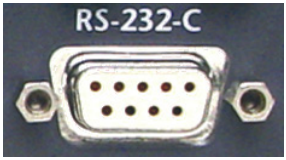


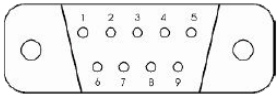

Pin 1 Ground
Pin 2 Input + 8.5 V
Pin 3 External contact input 1 (signal = 0 Volt)




Pin 1 Ground
Pin 2 Input + 8.5 V
Pin 3 External contact input 1 (signal = 0 Volt)




Pin 1 Output charger 8.5V / 300 mA
Pin 2 TXD of unit = input RS 232 C of PC
Pin 3 RXD of unit = output RS 232 C of PC
Pin 4 Not used
Pin 5 SG = Signal ground
Pin 6 Not used
Pin 7 Not used
Pin 8 Not used
Pin 9 Output charger 8.5 V / 300 mA

## 7. Technical specifications

| | |
|---|---|
| Case | In Terblend plastic (=ASA + polycarbonate) : Resistant to alcohol, glycols, most oils and greases, diluted acids and water. Non-resistant to aromatic hydrocarbons,, esters, acetones, concentrated mineral acids, ammonia gas an its dilutions. |
| Front panel | Polyester |
| Rear panel | Aluminium varnish |
| Keyboards | Flat with plastic dome tactile response |
| Dimensions | Width 180 mm, depth 75mm , height 50 mm |
| Degree of IP rating | IP 40 (according to IEC 529) |
| Weight of unit | 0.3 kg (0.675 lb) |
| Consumption | <250mA on Sylvac charger |
| Storage temperature | from –20°C to +45°C |
| Operating temperature | from +5°C to +40°C |
| Dimensions (digits) | height 13.2 mm |
| Thermal stabilization when switch on | 15 minutes minimum |
| Resolution | 0.1 µm (.00001") |
| Accuracy (For D50S PRO only) | Probe P50 : 3.9µm<br>Probe P25 : 1.9µm<br>Probe P10 : D50S-FAST (+0.6µm for P50)<br>Probe P5 : 1.6µm<br>Probe P2 : 1.5µm |

| | |
|---|---|
| and D50S PRO) | Probe P10 : 0.6µm<br><br>Probe P5 : 0.6µm |
| Accuracy coupled unit and probe (For D50S PRO only) | Probe P2 : 0.5µm |
| | |
| | |



## 8. Delivery

Cardboard box including:

| Nb | Designation | Order number |
|---|---|---|
| 1 | Digital unit D50S, D50S PRO or D50S-FAST | 804.1050 / 804.1060 / 804.1055.10 |
| 1 | Charger European 230 V | 904.4010 |
| or | Charger UK 240V | 904.4011 |
| or | Charger USA 120V | 904.4012 |
| or | Charger Japan 100V | 904.4013 |
| 8 | Protection cap | - |
| 2 | Foot for inclination | - |
| 1 | Operating instructions | 681072-100 |

## 9. Optional accessories

| Nb | Designation | Order number |
|---|---|---|
| 1 | Foot pedal | 904.4101 |
| 1 | Cable RS (straight) sub-D 9p (m/f), 3 m. | 925.5609 |
| 1 | 1 clipping part | 058.318 |

## 10. Certificates / Certificats / Zertifikat

**CERTIFICATE OF CONFORMITY**
We certify that this instrument has been manufactured in accordance with our Quality Standard and tested with reference to masters of certified traceability by the National Office of Metrology.

**CERTIFICAT DE CONFORMITE**
Nous certifions que cet instrument a été fabriqué et contrôlé selon nos normes de qualité et en référence avec des étalons dont la traçabilité est reconnue par l'office national de métrologie.

**QUALITÄTSZEUGNIS**
Wir bestätigen, dass dieses Gerät gemäss unseren internen Qualitätsnormen hergestellt wurde und mittels Normalen mit anerkannter Rückverfolgbarkeit, kalibriert durch das Nationalamt 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 | D50S Family |
| Description | Digital display D50S / D50S Pro |
| Part Numbers | 804.1050, 804.1060 |

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

| | |
|---|---|
| 2001/95/EC | 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 61010-1:2010 | Safety requirements for electrical equipment for measurement, control and laboratory use |
| EN 61326-1:2013 | Electrical equipment for measurement, control and laboratory use – EMC requirements |
| EN 50581:2012 | 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 12, 2019 |
| Name (position) | Eric Schnyder (CEO) |
| Signature |  |