DATA TRANSMISSION & SOFTWARE

With the help of the latest technologies, the industry is taking a new historical turn and is becoming increasingly «autonomous». In the sense that processes are simplified, ordered and organised in a predictive manner, inter-system connectivity is at the heart of the Industry 4.0 concept.

This new model is intended to be more interactive, in the sense that it is no longer up to the employee to fetch the information, but up to the devices to give it to them. Measuring instruments are an integral part of this process, which is why Sylvac is committed to offering innovative solutions for data collection and processing, which you will find in this chapter.

Data transmission and software

A

What is the future for metrology?
Industry 4.0 and other similar concepts want to take data collection to new levels, monitoring all along the manufacturing process, collecting and storing information from all measuring equipment.

Traditional metrology will evolve towards more automation and digital (paperless) solutions which will enable increased traceability and remote monitoring of a whole set of information centralised on one server.

Sylvac is ready for the challenge!
As Pioneer and Expert in connected Metrology, Sylvac did not wait the current excitement for data acquisition to offer reliable connection options and data processing software on the market. We have been striving to provide solutions for decades, first of all by offering wired connections (RS232 then USB) and over the last few years, by launching amazing Bluetooth wireless instruments that meet the current requirements, this at a price similar to the wired solutions of yesteryear.

The advantage of our instruments with Bluetooth® Wireless technology
Wired connections limit operator's freedom of action and more flexibility for the operator requested to execute measurements. New solutions can also be implemented for control-ling components using specific instruments or positions. Here are some of the highlights:
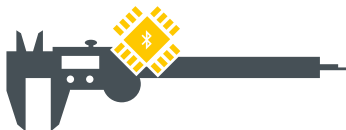
- **The solution is totally integrated into the instrument**
The wireless Bluetooth® transmitter is fixed on the electronic module of the instrument and no further accessory is required. The Sylvac instrument with Bluetooth® Wireless technology that you receive is ready to be connected. Most of our competitors claim to offer wireless solutions, which are not really wireless solutions, or which require an external element to be acquired which is often fragile and costly! Our integrated system also has the advantage of not being sensitive to liquids or dirt.

- **Transmission distance**
The maximum distance between the instrument and the peripheral device receiving the values is generally between 5 and 15 meters, depending on the configuration of the premises and any potential disruptive influences. Given that a wired USB connection is limited to 7 meters, the transmission range of our instruments with Bluetooth® Wireless technology is therefore greater than wired connections most of the time!

- **Autonomy**
Sylvac's technological achievement was to offer a solution with energy-efficient Bluetooth® Wireless technology so that our instruments powered by a standard lithium battery could remain connected and used for several weeks, even several months. This is achieved thanks to our patented measurement system (Sylvac System) which only needs minimum energy. On request our agent can give you an estimate of the battery service life of your instrument taking your specific usage conditions into account.

Data transmission and software
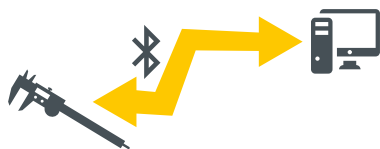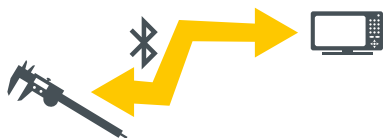
CONNECTIONS

- <u>Duplex Transmission</u>
Sylvac instruments are currently the only instruments able to communicate bidirectionally by Bluetooth® Wireless technology with the peripheral to which they are connected. This means that they can both send values and information and receive and interpret them. The best example of this is the transmission from the computer of a zero reset command for the instrument. This ensures the synchronisation of the value displayed on the instrument and on the peripheral device in order to limit the risks of error.

- <u>Freedom of action at the price of a wired connection</u>
One important factor to consider when selecting an instrument is of course its price! Our Sylvac instruments with Bluetooth® Wireless technology also offer, as well as the features listed above, the benefit of not costing more than a traditional wired digital instrument. Therefore they can be used everywhere as replacements for wired instruments.

How to connect our instruments with Bluetooth® Wireless technology
Flexibility is one of the watchwords that characterise our Sylvac instruments with Bluetooth® Wireless technology. They can be connected to a computer running Windows, to our D300S and D400S display units and to a Smartphone or Apple or Android tablet. This is how to connect them:
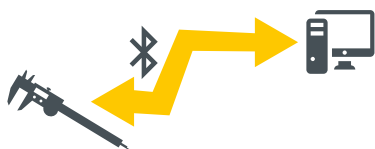
- <u>Connection to a computer</u>
There are different requirements depending on the instrument and the Windows operating system running on your computer. The most reliable solution is to attach a Sylvac Bluetooth® dongle to your computer which can connect up to 8 instruments. The most recent instruments also have a Human Interface Device (HID) direct communication mode enabling them to connect to a computer as a peripheral keyboard and transmit the values in any software application. (Use without dongle with Windows 10 possible with Sylcom)

- <u>Connection to our multi-functional display units</u>
Our D300S display unit can be fitted with a Sylvac Bluetooth® dongle in order to connect up to 8 Sylvac Bluetooth® instruments. The same applies to the D400S unit to which one or several (up to 12) M-Bus BT modules can be connected enabling a multitude of Sylvac Bluetooth® instruments to be connected to it.

- <u>Connection to a smartphone or tablet</u>
Our instruments can be connected directly to a smartphone and to tablets running Android or iOS. Sylvac demonstration apps are available from the Google Store and the Apple Store. These apps demonstrate the connection of one of our instruments with Bluetooth® technology to one of these peripheral devices. As this area is evolving very rapidly, please refer to our website for the latest information.

Data transmission and software
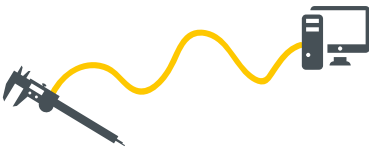
CONNECTIONS

IOT Ready connection profiles
The second generation of Sylvac Bluetooth® Technology equipped all Smart instrument for more possibilities and easier connection.

- SIMPLE Profile (default mode)
  - Instruments can be connected to several devices, but only one active connection and on a «first come, first served» basis.
  - Best solution if different people share the same instrument which has to be connected to several devices.
  - Avoid pairing manipulations at each device change.

- PAIRED Profile
  - Several instruments connected and locked (paired) to a specific device, which allows to have a lot of control stations side by side in a small area.
  - Best secured solution for a permanent control station.
  - Avoid instruments connecting to the wrong device.
  - Device-Instrument link has to be reset in order to connect to another device.

- HID Profile (Human Interface Device)
  - The instrument can be connected only to one specific device, but device can accept multiple input devices (keyboards, bar code reader, etc.).
  - Emulate a keyboard action.
  - Write and send data to any software/device without any further settings.
 - Device-Instrument link has to be reset in order to connect to another device.

Wired connections

- Wired Connections
  Despite all the benefits described above, it could be that Bluetooth® Wireless technology is not the most appropriate solution for a specific application. We are of course able to provide a connection cable fitted either with an RS232 or USB connector for every Sylvac instrument with a data output. Our standard cables are 2 or 3 meters in length depending on the models. On request they can be delivered in special lengths of up to 15 metres for RS232 cables and up to 7 metres for USB cables.

Use of a digital test indicator without its battery
In some cases, as for example when a digital test indicator is installed in a location that is difficult to access, or if it is fitted on a non-stop operating machine, it may be advisable to replace the battery of the instrument with a special cable (Power) which will ensure both its power supply and the data transfer. Most of our digital test indicators offer this option and they are identified by the Power logo. Other digital test indicators, intended for connection to programmable logic controllers (PLC) also operate without a battery and their power supply is provided by the controller.
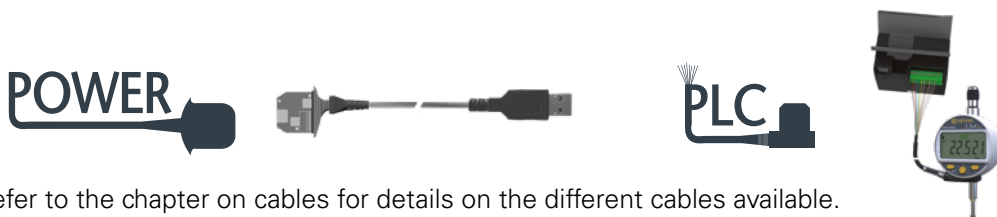
Please refer to the chapter on cables for details on the different cables available.
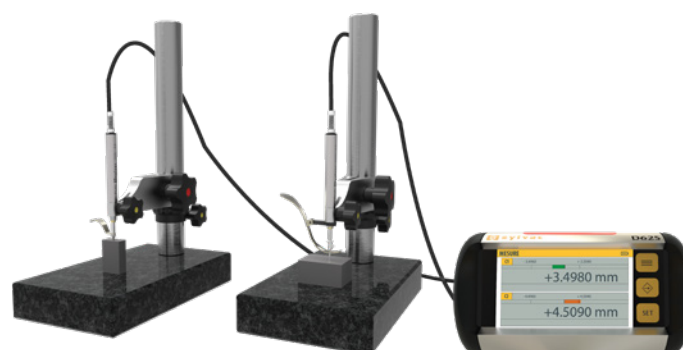
Data transmission and software

CONNECTIONS

Connection RS-485

Connection Proximity

Connection M8

Bluetooth® Wireless technology with dongle
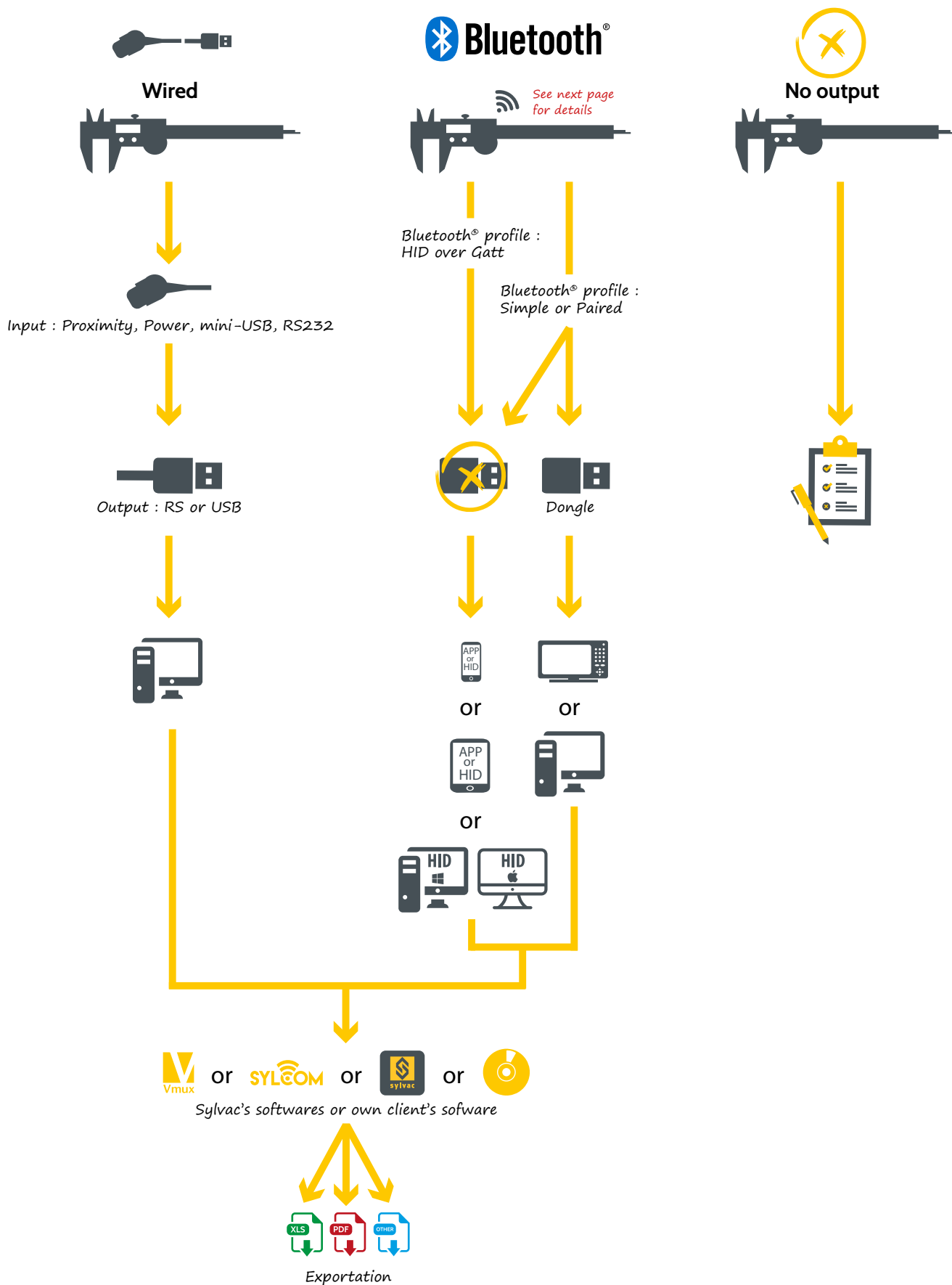

Bluetooth® Wireless technology via HID

Bluetooth® Wireless technology and USB

Data transmission and software

Wired

Bluetooth®

See next page for details

No output

Bluetooth® profile :
HID over Gatt

Bluetooth® profile :
Simple or Paired

Input : Proximity, Power, mini-USB, RS232

Output : RS or USB

Dongle

APP or HID

or

APP or HID

or

or

HID

HID

Vmux or **SYLCOM** or **sylvac** or

Sylvac's softwares or own client's sofware

XLS PDF OTHER

Exportation

WIRELESS CONNECTION PROFILES

A

IOT READY

Bluetooth®

Menu BT config

Bluetooth® profile 1 **SIMPLE**	Bluetooth® profile 2 **PAIRED**	Bluetooth® profile 3 **HID over GATT**

Identified by MAC Address

.. multiple connections, only one active connection...

Master 1   Master 2   Master 3

Long term key exchange

Master device

Master device

Keyboard 1   Bar code reader   Keyboard 2

Dongle

Windows 10

Android

iOS

Vmux
or
SYLCOM
or
or
D300S
or
Windows 7
or
Windows 8
or
Windows 10

Sylcom

Sylvac Anywhere

Sylvac Anywhere

Windows 7
(Could need network card drivers update)
or
Windows 8
or
Windows 10
or
Android
or
iOS
or
macOS

Sylvac softwares

DATA TRANSFER

A

SYLCOM

Sylcom is the latest software product to be launched by Sylvac and has been designed to process information from instruments connected via Bluetooth® Wireless technology or via a USB cable. It creates an almost limitless number of display channels spread over one or several pages. Several display modes are available so that the status of the variable measured (GO/NG) can be visualised instantaneously. Sylcom can also be used to measure components sequentially, to collect all values simultaneously and to define a time interval in order to save values automatically. The data can be saved in Sylcom and then exported to an Excel file.

The concept is to offer a modular software application based on the specific functionalities required.

Free Sylcom LITE version on www.sylvac.ch

Available in **LITE** version of the software allowing to connect 1 instrument and 1 pedal (free), **Standard** version with standard functions allowing to connect up to 16 instruments or pedals, by USB cable (maximum 15) by Bluetooth® or by M-BUS modules., **PRO** version, allowing to connect up to 15 instruments by USB cable, up to 40 instruments by Bluetooth® and up to 128 instruments by M-BUS modules (total maximum 128 connected instruments). Several features such as control plans, monitoring, statistics and SPC export are available (60 days trial version available) and **Expert** version offering the same functionalities as the PRO version, but with the additional possibility of connecting up to 500 instruments via Bluetooth® with the «On the fly» mode, to communicate in the OPC-UA protocol and to automatically suggest tool corrections to some CNCs machines.

Your metrology partner for the new challenges ahead!

We hope that all the information described above has convinced you that Sylvac is not only a manufacturer of innovative and high-quality measuring instruments but also the partner you need to help your quality control evolve towards the new industrial model that awaits us.

SYLCOM
Data processing software
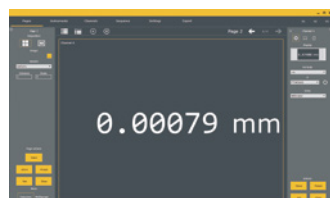
Channel display

Multi-channel display with colour-coded tolerances

Statistics

Control plans

Softwares SYLCOM	Order number Dongle licence	Order number Digital licence
Sylcom LITE	-	**FREE**
Sylcom Standard	981-7132	981-7129
Sylcom Pro	981-7240	981-7245
Sylcom Expert	981-7250	981-7255
Upgrade Sylconnect to Sylcom*	981-7139	-

Accessories	Order number
Dongle Smart	981-7100
USB pedal	926-7020
USB pedal robust	926-7021
Footpedal Smart	926-7022

* contact us to get the procedure for the update

Applications

DATA TRANSFER

Vmux

This software may be considered as a virtual interface which assigns a COM port to instruments connected by wireless Bluetooth® transmission or by USB cable and then redirects the values from these instruments to any Windows software (SPC or other).

For the simplest applications Vmux simply exports the values into a selectable Excel file. Extremely user-friendly, Vmux is an excellent replacement for the multiplexer boxes used in the past.
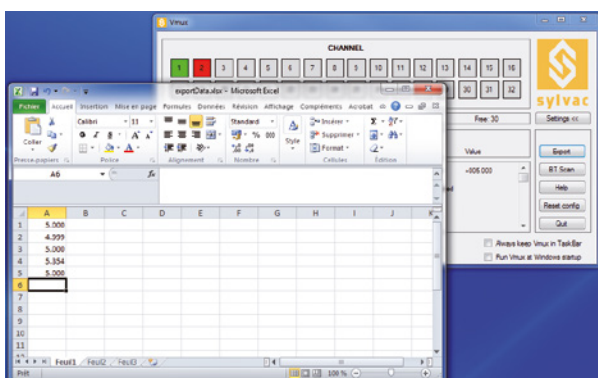

A free version Vmux Lite, limited to eight connections can be downloaded free of charge from our website. The full version of Vmux with the capacity to connect up to 32 instruments (max. 16 instruments with wireless Bluetooth® transmission) can be ordered from the Sylvac distributor in your country.
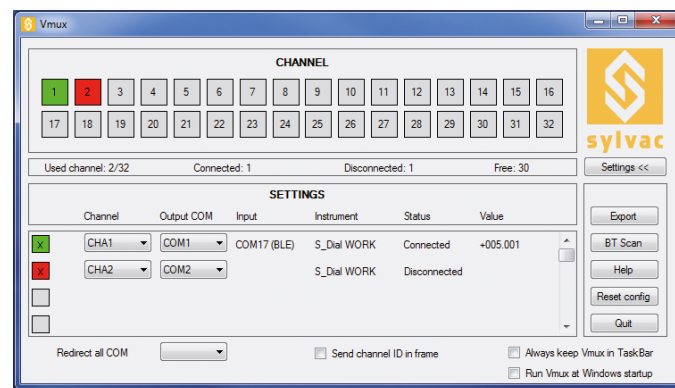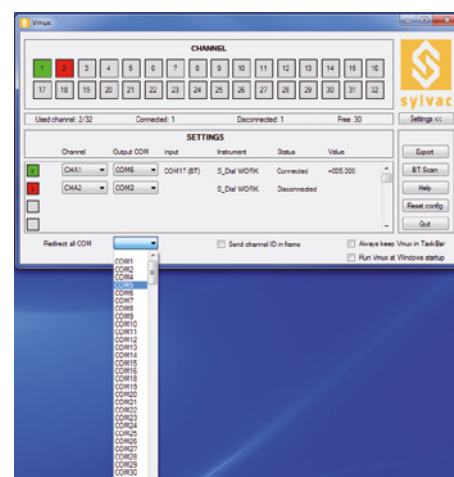

Basic display
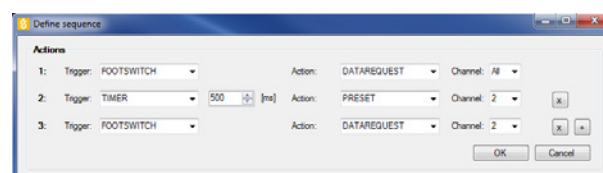
Defining a sequence

Exporting data in Excel®

Port COM changing

Softwares Vmux	Order number
Vmux LITE	**FREE**
Vmux (Dongle licence)	981-7161
Vmux (Digital licence)	981-7163

Try the free version Vmux LITE available on our website www.sylvac.ch

Accessories	Order number
Dongle Smart	981-7100
USB pedal	926-7020
USB pedal robust	926-7021
Footpedal Smart	926-7022

Applications

DATA TRANSFER

Sylvac Anywhere

Allow to display the instruments values with Wireless *Bluetooth®* Technology on tablets and smartphones Android from version 5.0 and Apple from version IOS9, equipped with Wireless *Bluetooth®* Technology 4.0.

Possibility to saved data on the device and to export them to any compatible application.

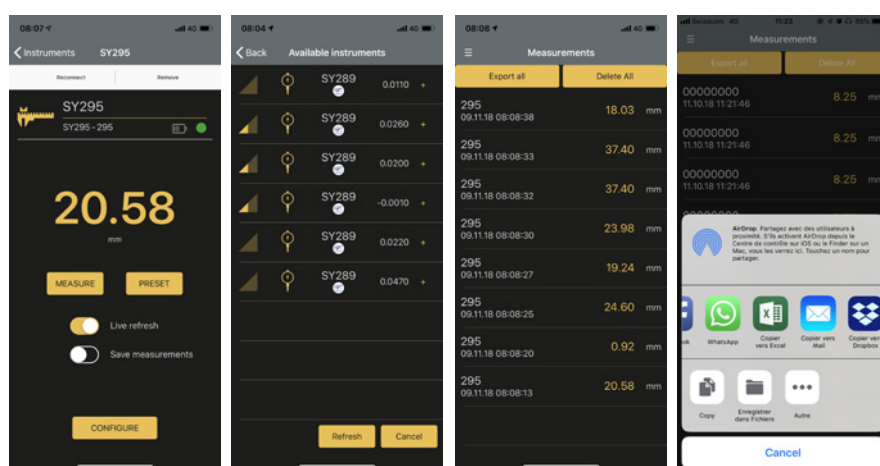Available for free on the Google Play Store and the l'App Store.

Display

Save

Export

Dedicated application for Sylvac instruments with old and new Bluetooth® technology.

| Instrument connected | Available instruments | Data saved | Exportation of data |

No dongle required !

Various softwares

OVERVIEW OF SOFTWARE AND FUNCTIONS

	SYLCOM					VMUX	
	LITE	Standard	Pro	Expert	Upgrade from Sylconnect	LITE	Standard
		981-7132/29	981-7240	981-7250	981-7139		981-7161
NUMBER OF INSTRUMENTS							
Max. 1	●						
Max. 8						●	
Max. 16		●			●		
Max. 32							● 1)
Up to 128			● 2)				
Max. 500				● 3)			
PLATFORMS							
Windows 7	●	●	●	●	●	●	●
Windows 8.1	●	●	●	●	●	●	●
Windows 10	●	●	●	●	●	●	●
Dongle required for instruments Smart	(●)	(●)	(●)	(●)	(●)	●	●
FUNCTIONS							
Export CSV	●	●	●	●	●		
Export to Microsoft Excel®	●	●	●	●	●		
Immediate export to external program	●	●	●	●	●	●	●
Communication gateway (virtual COM port)						●	●
Display value	●	●	●	●	●	●	●
Display tolerances	●	●	●	●	●		
Analogue display	●	●	●	●	●		
Chart display	●	●	●	●	●		
Multi-channel		●	●	●	●		●
Flatness and advanced formulas			●	●			
Inspection plan			●	●			
Statistics			●	●			
Action sequences		●	●	●	●		
Actions scripts			●	●			
User management	●	●	●	●	●		
Work menu (controlling instrument menus)	●	●	●	●	●		
OPC-UA Mode				●			
Tool correcor				●			

1) Max. 32 USB or 16 USB and 16 instruments with Bluetooth® Wireless technology
2) via Mbus (depends on hardware), max. 40 instruments with Bluetooth® Wireless technology (5 dongles)
3) via «On the fly» Mode, no pairing

Wireless transmission

Dongle Smart

DESCRIPTION

A

- Possibility to connect up to 8 instruments per dongle
- Duplex data transmission
- Plug and play !
- Individual identification of each instrument with *Bluetooth®* wireless technology
- Automatic detection of instruments

Bluetooth®

TECHNICAL SPECIFICATIONS

	981-7100
USB	●
Coupled instruments per module	8
Automatic detection of instrument	●
Instruments and software compatibility	D300S & Sylcom & Vmux
Transmission distance [1] m	15

[1] depends on the environment.

Wireless transmission

S_Footswitch Smart

- Robust footpedal with Bluetooth® wireless technology

- IP rating IP53

- Battery life : 3 years (Battery CR2477)

- Possibility of trigging sequences from the software Vmux & Sylcom

Built-in **Bluetooth**®

Non-slip foot

Status LED (low battery, Bluetooth® transmission)

SWISS MADE

Attachment plate (option)

Bluetooth® transmission reset button

Battery cover

SWISS MADE
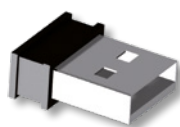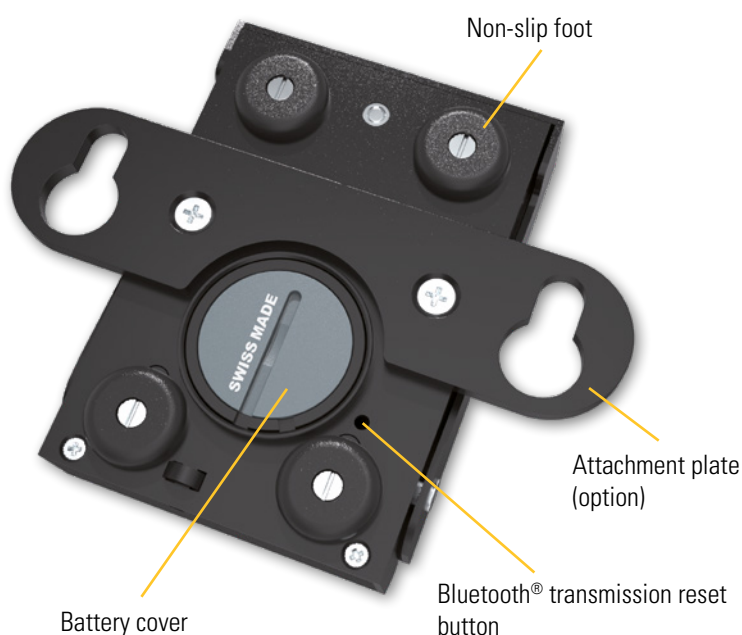
Dongle with Bluetooth® Wireless technology 981.7100

TECHNICAL SPECIFICATIONS

S_Footswitch Smart		926-7022
Connection		Bluetooth® wireless technology*
Weight	g	260
Software compatibility		Vmux (1.37 and later) and Sylcom
Transmission distance [1]	m	up to 15m

[1] depends on the environnement

* Connection with dongle #981.7100

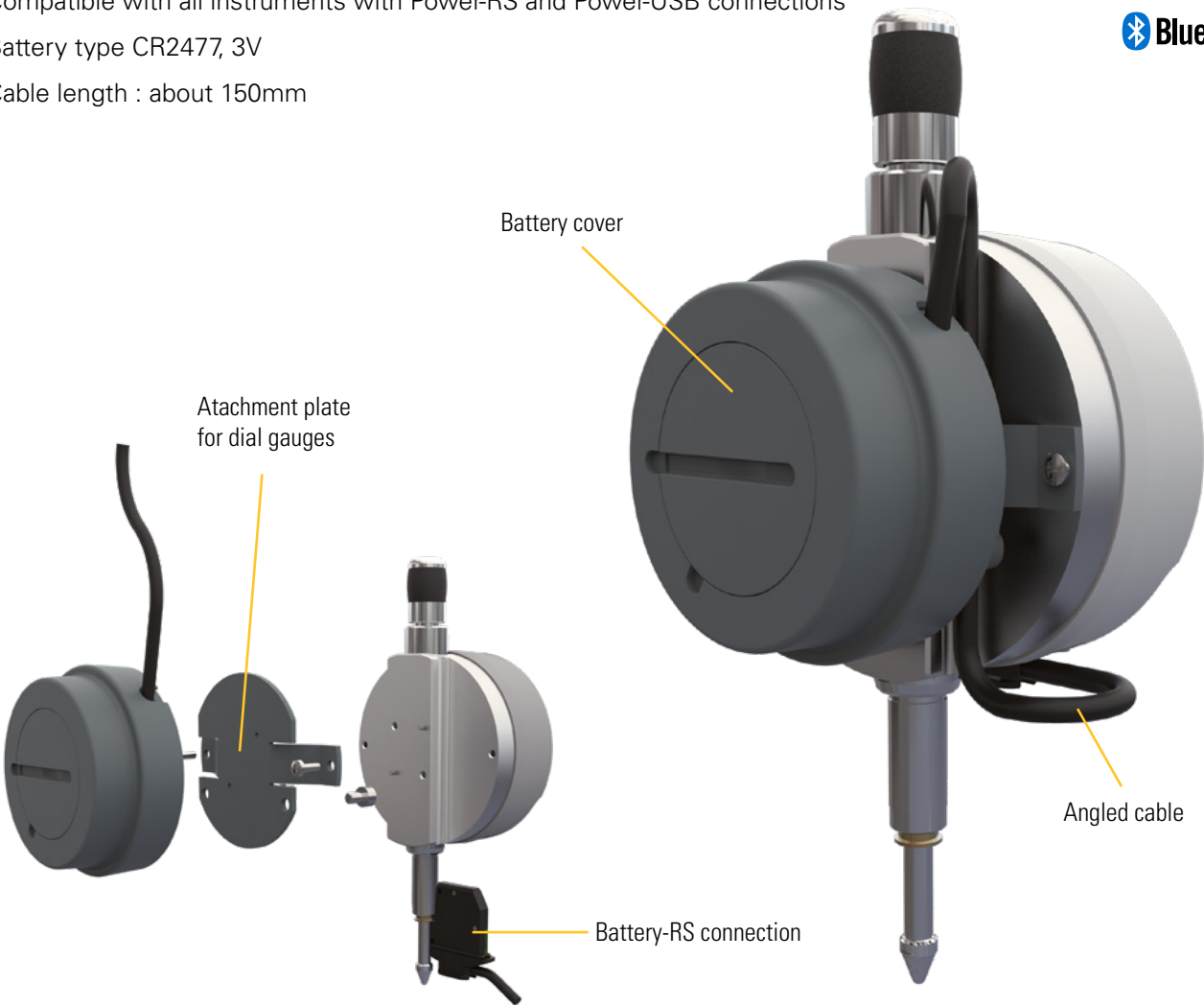| Accessories		926-7023	985-2217
Description		Fixing plate	Adapter for battery CR2032
Weight	g	85	5

Wireless transmission   Battery Pack

DESCRIPTION

A

- External power-supply for instruments with Bluetooth® wireless technology
- Compatible with all instruments with Power-RS and Power-USB connections
- Battery type CR2477, 3V
- Cable length : about 150mm

Built-in Bluetooth®

Battery cover

Atachment plate for dial gauges

Angled cable

Battery-RS connection

TECHNICAL SPECIFICATIONS

Battery Pack		926-7024
Connections		Power-RS / Battery-RS
Weight	g	71.6 (91.4g with atachment plate)
Capacity max.	mAh	1000
Clamping		compatible with dial gauges Ø60mm
Cable length	mm	150

Accessories		985-2217
Description		Adapter for battery CR2032
Weight	g	5

Other

BATTERIES

Order number and compatibilities

	Battery CR2032	**985-2215** Calipers S_Cal, ultra-light calipers ULX4 [1], dial gauges S_Dial (except PLC), micrometers, bore gauges, digital scale S_Scale digital micrometer screws, Feeler Gage, depth gauges S_Depth, Protractor, Hi_Gage, footpedal Smart[1] and benches table PS16 V2[1]
	Battery CR2477	**985-2216** Ultra-light calipers ULX4. benches table PS16 V2, footpedal Smart, Battery Pack

[1] With adapter

CONNECTION

Our cables are available in various lengths indicated below.

On request, we can deliver our special length cables, within the following limits:

• RS232 cables: maximum length 15 meters

• USB cable: maximum length 7 meters.

• Special length cable on request : 926.1999.99

		Standard 2 m	Standard 3 m	Standard 5 m	≤15 m	Bi-directional
	Opto RS	926-5521	--	--	926-5535	
	Opto RS	926-6521	--	--	926-6535	●
	Opto RS	926-6538	--	--	926-6542	●
	Opto RS	926-6539	--	--	926-6543	●
	Opto USB	926-6621	--	--	1)	●
	Power RS	--	905-4516	--	905-4519	●
	Power RS (bent)	--	905-4538	--	1)	●
	Power USB	--	926-6821	--	1)	●
	Power USB (bent)	--	926-6838	--	1)	●
	PLC digital indicator	--	--	926-6101	--	--

1) Maximum 7m (Standard 5m)

Cables   S_Connect

CONNECTION

Legend: ■ = compatible (highlighted) · ● = connection point

S_Cal Pro / S_Mike Pro / S_Cal EVO Proximity	UL4	S_Depth PRO / S_Scale WORK / S_Scale EVO	Protractor	S_Dial S233 / S234 / S_Dial MINI / S_Dial TEST	S_Dial PRO / S_Dial WORK / Hi_Gage ONE	Xtreme	Digital microscrew	Hi_Cal	PS16 VS	S_View D50S / D80S PC output	S_View D200S	D300S instr. input	D300S output PC	D302 / D304	D400S	D70S/H/I/A	S_Dial WORK PLC
■		■		■		■		■	●	■		●		■		■	
■		■		■		■		■	●	■		●		■		■	
■		■		■		■		■	●	■		●		■		■	
■		■		■		■		■	●	■		●		■		■	
■		■		■		■		■	●	■		●		■		■	
■		●	●	●	●	●	●	■		■		●		■		■	
■		●	●	●	●	●	●	■		■		●		■		■	
■		●	●	●	●	●	●	■		■		●		■		■	
■		●	●	●	●	●	●	■		■		●		■		■	
■		■		■		■		■		■		■		■		■	●

Cables

CONNECTION

A

	Standard 2 m	Standard 3 m	≤15 m	Bi-directional
Proximity RS232	--	926-6723	[1]	●
Proximity USB	--	926-6721	[1]	●
RS232 1:1	--	925-5609	[1]	●
USB-USB	--	804-1210	--	●
Mini USB-USB	--	926-6001	--	●
Adaptator RS-USB	925-1142*	--	--	●
Booster + footswitch	--	925-1143 [2]	--	●
Special - mini-RS232	--	926-5505	--	●
RS232 1X1 (3 pins wired)	--	804-2201	--	●
RS232 1X1	--	804-2204	--	●
M8-RS485	--	804-2205	--	

[1] Maximum 7m (Standard 5m)
[2] must be connected with bi-directional cables only
* The D70 and D400S do not work on Vmux with this adapter

Cables

S_Connect

CONNECTION

S_Cal Pro / S_Mike Pro / S_Cal EVO Proximity	UL4	S_Depth PRO / S_Scale WORK / S_Scale EV0	Mesureur d'angles	S_Dial S233 / S234 / S_Dial MINI / S_Dial TEST	S_Dial ONE / S_Dial WORK	Hi_Gage ONE	PS16 V2	Digital microscrew	Hi_Cal	PS16 V1 VS	S_View D50S / D80S PC output	S_View D200S	D300S instr. input	D300S output PC	D302 / D304	D400S	D70 H/I	D70 S	D70 A	D62S	Xtreme 3	M-Bus (except RS)	Z5
●	●		●		●		●						●								●		
●	●		●		●		●						●								●		
									●		●	●	● 6)		●	● 4)		●		●		●	
												●		●		●							
							●		●						●					●			●
3)	3)	3)	3)	3)	3)			3)	3)	3)	●	●				● 5)	● 5)	● 5)	● 5)	●	3)		
3)	3)	3)	3)	3)	3)			3)		3)											3)		
																							●
																	● 7)		● 7)				
																	● 8)		● 8)				
																			● 9)				

3) must be connected with RS232 cables
4) For MB-XX module and RS232 PC connections
5) RS232 connection to PC (D70S version and D400S only) bidirectional. Versions D70I/H require a crossover RS232 cable.
6) Not working on PC
7) Update of the units
8) Crossover cable for PC connection
9) Connection cable for MB-I/O