

POLISPEC.COM  
ITPHOTONICS.COM



## PRODUCTS CATALOGUE

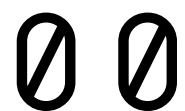
REFERENCE INSTRUMENTS  
FOR SPECTROPHOTOMETRIC ANALYSIS

Polispec  
Polispec industry  
Other products  
Installation kits



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P O L I S P E C . C O M



**POLISPEC**  
Getting insight

ITPHOTONICS.COM

*Founded in 2012, our company is dynamic and creative, **specialised in spectrophotometry and applied electronics**. We use our knowledge alongside theoretical and practical methods to design and **build electronic systems and measuring instruments**.*

*Our core business is **applied spectrophotometry** in its various forms and for every field of application.*

We created **Polispec (Portable and On Line SPECTrophotometer)**, a line of compact, industrial-design spectrophotometers, studied and built both for portable use as well as for online installation and available for various wavelength ranges. They operate based on a luminous source interacting with the molecules and chemical bonds that characterise the matrix being analysed, thereby allowing both quantitative and qualitative measurements to be taken.

Polispec line instruments are designed to **guarantee intensive use in all processes requiring immediate, precise measurements to manage variables and for self-control systems**.



. DESIGN



. QUALITY



. SOFTWARE INNOVATION



L I T E



N I R



N I R e



V I S - N I T



P o l i s p e c

0 1

L I N E   O F  
I N S T R U M E N T S

**Polispec LITE is an extremely compact reflection spectrophotometer, equipped with an internal lighting system and automatic references.** The casing is made entirely of anodised aluminium, while a large heat sink located at the front removes the heat generated by the lighting system.

The entire system is designed for use in various settings and work conditions, thanks in part to the option of building it using different materials for the external surfaces and for the surfaces that come into contact with the products being analysed.

01  
Polispec

01.01

LITE



<b>Dim.</b>	21.6 x 21.3 x 8.5 cm (l x h x w)
<b>Weight</b>	2.5 kg
<b>Material</b>	Anodised and/or painted aluminium
<b>IP rating</b>	IP68 (standard) / IP6X + IPX9K (upon request)



<b>Sensor</b>	CMOS, 256 pixels
<b>Spectral range</b>	Available in various ranges between 580-1080 nm
<b>Average numerical resolution</b>	< 2 nm
<b>Average HWHM optical resolution</b>	< 8 nm (in range 640-1050 nm)
<b>Optical signal collection</b>	Direct optical coupling
<b>Power supply</b>	12 Vdc with power supply included, interchangeable rechargeable battery
<b>Maximum absorbed power</b>	15 W



<b>Type of measurements</b>	Reflectance / transmittance *
<i>* may require external accessories</i>	
<b>Measurement geometry</b>	Diffuse / 0°
<b>Measurement references</b>	Internal and automatic
<b>Communication channels **</b>	Standard RS422
<i>** also available in ethernet configuration and RS485</i>	
<b>Source type</b>	Replaceable halogen lamp



<b>Controls and signals</b>
Hardware button dedicated to reference acquisition.
Hardware button dedicated to measurement acquisition.
Light and sound signal indicating acquisition status.



**Software**

**Polidata** Data acquisition and chemometric prediction software compatible with SensoLogic and UCal Chemometric suites.

**Poliprocess** Process analysis software compatible with SensoLogic and UCal Chemometric suites, interface available for ISObus and PLC systems (modbus over TCP/IP or S7).



### **OPTIONAL CONFIGURATIONS (for "hybrid" laptop + online use)**

<b>No options</b>	An external processing unit is required in this configuration
<b>Option C</b>	In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with CANbus communication channel
<b>Option H</b>	In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with Ethernet communication channel

polispecLITE

**Polispec NIR is a sturdy, compact spectrophotometer with integrated reflectance measurement optics.** Designed for both manual use and in-process installation, it is built with special technological features that make it high-performing in terms of sensitivity, operating dynamics, and signal cleanliness.


These qualities make **Polispec NIR** suitable to analyse very diverse matrices, from the most reflective to the most absorbent, without requiring several versions of the same instrument for each field of application.


01  
Polispec


01.02


NIR




	<b>Sensor</b>	InGaAs, 256 pixels, with single-stage Peltier cooling
	<b>Cooling control system</b>	Feedback, stability T < 0.01 K
	<b>Spectrum range</b>	900-1700 nm
	<b>Average numerical resolution</b>	3.2 nm
	<b>Average HWHM optical resolution</b>	3.25 nm
	<b>Optical signal collection</b>	Direct optical coupling
	<b>Power supply</b>	12 Vdc with power supply included, interchangeable rechargeable battery
	<b>Maximum absorbed power</b>	20 W

	<b>Type of measurements</b>	Reflectance / transmittance *
	<small>* may require external accessories</small>	
	<b>Measurement geometry</b>	Diffuse / 0°
	<b>Measurement references</b>	Internal and automatic
	<b>Communication channels **</b>	Standard RS422
	<small>** also available in ethernet configuration and RS485</small>	
	<b>Source type ***</b>	Replaceable halogen lamp
	<small>*** internal back-up lamp option available</small>	

	<b>Controls and signals</b>	
	Hardware button dedicated to reference acquisition.	
	Hardware button dedicated to measurement acquisition.	
	Light and sound signal indicating acquisition status.	

	<b>Software</b>	
	<b>Polidata</b>	Data acquisition and chemometric prediction software compatible with SensoLogic and UCal Chemometric suites.
	<b>Poliprocess</b>	Process analysis software compatible with SensoLogic and UCal Chemometric suites, interface available for ISObus and PLC systems (modbus over TCP/IP or S7).

	<b>OPTIONAL CONFIGURATIONS (for "hybrid" laptop + online use)</b>	
	<b>No options</b>	An external processing unit is required in this configuration
	<b>Option C</b>	In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with CANbus communication channel
	<b>Option H</b>	In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with Ethernet communication channel



<b>Dim.</b>	21.6 x 21.3 x 8.5 cm (l x h x w)
<b>Weight</b>	3.2 kg
<b>Material</b>	Anodised and/or painted aluminium
<b>IP rating</b>	IP68 (standard) / IP6X + IPX9K (upon request)

polispec<sup>NIR</sup>

**Polispec NRe** is a sturdy, compact, extended spectral range spectrophotometer with integrated reflectance measurement optics. Designed for both manual use and in-process installation, it is built with special technological features that make it high-performing in terms of sensitivity, operating dynamics, and signal cleanliness. These qualities make **Polispec NRe** suitable to analyse very diverse matrices, from the most reflective to the most absorbent, without requiring several versions of the same instrument for each field of application.

01  
Polispec

01.03

N I R e



<b>Dim.</b>	21.6 x 21.3 x 8.5 cm (l x h x w)
<b>Weight</b>	3.3 kg
<b>Material</b>	Anodised and/or painted aluminium
<b>IP rating</b>	IP68 (standard) / IP6X + IPX9K (upon request)



<b>Sensor</b>	Dual chip InGaAs, 512 pixels, with double-stage Peltier cooling
<b>Cooling control system</b>	Feedback, stability T < 0.03 K
<b>Spectrum range</b>	930-2180 nm
<b>Average numerical resolution</b>	2.4 nm
<b>Average HWHM optical resolution</b>	4 nm
<b>Optical signal collection</b>	Direct optical coupling
<b>Power supply</b>	12 Vdc with power supply included, interchangeable rechargeable battery
<b>Maximum absorbed power</b>	24 W



<b>Type of measurements</b>	Reflectance / transmittance *
<small>* may require external accessories</small>	
<b>Measurement geometry</b>	Diffuse / 0°
<b>Measurement references</b>	Internal and automatic
<b>Communication channels **</b>	Standard RS422
<small>** also available in ethernet configuration and RS485</small>	
<b>Source type ***</b>	Replaceable halogen lamp
<small>*** internal back-up lamp option available</small>	



<b>Controls and signals</b>
Hardware button dedicated to reference acquisition.
Hardware button dedicated to measurement acquisition.
Light and sound signal indicating acquisition status.



**Software**

**Polidata** Data acquisition and chemometric prediction software compatible with SensoLogic and UCal Chemometric suites.

**Poliprocess** Process analysis software compatible with SensoLogic and UCal Chemometric suites, interface available for ISObus and PLC systems (modbus over TCP/IP or S7).



### **OPTIONAL CONFIGURATIONS (for "hybrid" laptop + online use)**

<b>No options</b>	An external processing unit is required in this configuration
<b>Option C</b>	In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with CANbus communication channel
<b>Option H</b>	In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with Ethernet communication channel

polispecNRe



**Polispec VIS-NIT is an extremely sturdy spectrophotometric sensor, designed to be able to connect to a variety of measurement probes and lighting sources via fibre optics.** Being particularly compact, **Polispec VIS-NIT** is easy to integrate anywhere along a production line. The casing is made of anodised aluminium and is available with various levels of protection from liquids and dust. Fibre optics input with integrated optical modulator, shutter, and "neutral density" references.

01  
Polispec

01.04

VIS-NIT



**Dim.** 110 x 10.5 x 19.5 cm (l x h x w)

**Weight** 750 g

**Material** Anodised aluminium



**Sensor** CMOS, 256 pixels

**Spectral range** **A:** 340-750 nm  
**B:** 580-1080 nm

**Average numerical resolution** < 2 nm

**Average HWHM optical resolution** **A:** < 7 nm  
**B:** < 10 nm

**Optical signal collection** Collimated SMA input

**Power supply** 12 Vdc with power supply included

**Maximum absorbed power** 10 W



**Measurement geometry** Multi-level ND attenuation.

Continuous optical attenuation via input beam reduction along the X axis or in predefined steps (contextual attenuation along X and Y)

**Reference acquisition** Automatic internal references

**Communication channel** USB



#### Software

**Poliprocess** For in-line measurements to interface with PLC automation. Available for continuous acquisitions for filtering and for *real-time* chemometric predictions.

**Polidata** Completely automated software for *stand-alone* and laboratory acquisitions and chemometric predictions.

**PoliADK** Windows ADK for software developers. ADK is able to independently manage optimal instrument settings, including calculating optimal integration time. The reference acquisition procedure is also automated and is used to apply pre-treatments such as spectra *smoothing* or interpolation. It also extracts *raw* and post-processed spectral information.

Our software is compatible with SensoLogic and UCal chemometric calibration suites.

polispecVIS-NIT



P o l i s p e c  
i n d u s t r y

02

L I N E   O F  
I N S T R U M E N T S

**Polispec LITE industry** is an extremely compact reflection spectrophotometer, equipped with an internal lighting system and automatic references. Especially suitable for macro-element analysis, **Polispec LITE industry** easily adapts to various working conditions. The casing is made entirely of anodised aluminium, while a large heat sink located at the front removes the heat generated by the lighting system.

02  
Polispec industry

02.01

LITE  
industry



Adaptable to specific installation needs



<b>Dim.</b>	21.6 x 21.3 x 8.5 cm (l x h x w)
<b>Weight</b>	2.5 kg
<b>Material</b>	Anodised and/or painted aluminium
<b>IP rating</b>	IP68 (standard) / IP6X + IPX9K (upon request)



<b>Sensor</b>	CMOS, 256 pixels
<b>Spectral range</b>	Available in various ranges between 580-1080 nm
<b>Average numerical resolution</b>	< 2 nm
<b>Average HWHM optical resolution</b>	< 8 nm (in range 640-1050 nm)
<b>Optical signal collection</b>	Direct optical coupling
<b>Power supply</b>	12 Vdc with power supply included, interchangeable rechargeable battery
<b>Maximum absorbed power</b>	15 W



<b>Type of measurements</b>	Reflectance / transmittance *
* may require external accessories	
<b>Measurement geometry</b>	Diffuse / 0°
<b>Measurement references</b>	Internal and automatic
<b>Communication channels **</b>	Standard RS422
** also available in ethernet configuration and RS485	
<b>Source type</b>	Replaceable halogen lamp



<b>Controls and signals</b>	Available in two versions, with or without processing unit integrated into the instrument case.
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<b>Software</b>	
<b>Poliprocess</b>	Process analysis software compatible with SensoLogic and UCal Chemometric suites, interface available for ISObus and PLC systems (modbus over TCP/IP or S7).



<b>OPTIONAL CONFIGURATIONS</b>	
<b>No options</b>	An external processing unit is required in this configuration
<b>Option NC</b>	In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with CANbus communication channel
<b>Option NH</b>	In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with Ethernet communication channel



**Polispec NIR industry is the top-class instrument in the range, a sturdy, compact spectrophotometer created for in-process installation.**  
It was designed considering various technological approaches that make it high-performing in terms of sensitivity, operating dynamics, and signal cleanliness.

02  
Polispec industry

02.02

NIR  
industry



Adaptable to specific  
installation needs



<b>Dim.</b>	21.6 x 21.3 x 8.5 cm (l x h x w)
<b>Weight</b>	3.2 kg
<b>Material</b>	Anodised and/or painted aluminium
<b>IP rating</b>	IP68 (standard) / IP6X + IPX9K (upon request)



<b>Sensor</b>	InGaAs, 256 pixels, with single-stage Peltier cooling
<b>Cooling control system</b>	Feedback, stability T < 0.01 K
<b>Spectrum range</b>	900-1700 nm
<b>Average numerical resolution</b>	3.2 nm
<b>Average HWHM optical resolution</b>	3.25 nm
<b>Optical signal collection</b>	Direct optical coupling
<b>Power supply</b>	12 Vdc with power supply included, interchangeable rechargeable battery
<b>Maximum absorbed power</b>	20 W



<b>Type of measurements</b>	Reflectance / transmittance *
<small>* may require external accessories</small>	
<b>Measurement geometry</b>	Diffuse / 0°
<b>Measurement references</b>	Internal and automatic
<b>Communication channels **</b>	Standard RS422
<small>** also available in ethernet configuration and RS485</small>	
<b>Source type ***</b>	Replaceable halogen lamp
<small>*** internal back-up lamp option available</small>	



<b>Controls and signals</b>	Available in two versions, with or without processing unit integrated into the instrument case.
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<b>Software</b>	<b>Poliprocess</b> Process analysis software compatible with SensoLogic and UCal Chemometric suites, interface available for ISObus and PLC systems (modbus over TCP/IP or S7).
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<b>OPTIONAL CONFIGURATIONS</b>	
<b>No options</b>	An external processing unit is required in this configuration
<b>Option NC</b>	In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with CANbus communication channel
<b>Option NH</b>	In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with Ethernet communication channel

**Polispec NRe industry** is a sturdy, compact, extended spectral range spectrophotometer with integrated reflectance measurement optics. Designed for in-process installation, it is built with special technological features that make it high-performing in terms of sensitivity, operating dynamics, and signal cleanliness.

02  
Polispec industry

02.03

N I R e  
industry



Adaptable to specific  
installation needs



<b>Dim.</b>	21.6 x 21.3 x 8.5 cm (l x h x w)
<b>Weight</b>	3.3 kg
<b>Material</b>	Anodised and/or painted aluminium
<b>IP rating</b>	IP68 (standard) / IP6X + IPX9K (upon request)



<b>Sensor</b>	Dual chip InGaAs, 512 pixels, with double-stage Peltier cooling
<b>Cooling control system</b>	Feedback, stability T < 0.03 K
<b>Spectrum range</b>	930-2180 nm
<b>Average numerical resolution</b>	2.4 nm
<b>Average HWHM optical resolution</b>	4 nm
<b>Optical signal collection</b>	Direct optical coupling
<b>Power supply</b>	12 Vdc with power supply included, interchangeable rechargeable battery
<b>Maximum absorbed power</b>	24 W



<b>Type of measurements</b>	Reflectance / transmittance *
* may require external accessories	
<b>Measurement geometry</b>	Diffuse / 0°
<b>Measurement references</b>	Internal and automatic
<b>Communication channels **</b>	Standard RS422
** also available in ethernet configuration and RS485	
<b>Source type ***</b>	Replaceable halogen lamp
*** internal back-up lamp option available	



<b>Controls and signals</b>
Available in two versions, with or without processing unit integrated into the instrument case.



<b>Software</b>
<b>Poliprocess</b> Process analysis software compatible with SensoLogic and UCal Chemometric suites, interface available for ISObus and PLC systems (modbus over TCP/IP or S7).



<b>OPTIONAL CONFIGURATIONS</b>
<b>No options</b> An external processing unit is required in this configuration
<b>Option NC</b> In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with CANbus communication channel
<b>Option NH</b> In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with Ethernet communication channel

**Polispec VIS-NIT industry is an extremely sturdy spectrophotometer, designed to be able to connect to a variety of measurement probes and lighting sources via fibre optics.** Being particularly compact, **Polispec VIS-NIT industry** is easy to integrate anywhere along a production line.

02  
Polispec industry

02.04

VIS-NIT  
industry



**Sensor** CMOS, 256 pixels

**Spectral range** **A:** 340-750 nm  
**B:** 580-1080 nm

**Average numerical resolution** < 2 nm

**Average HWHM optical resolution** **A:** < 7 nm  
**B:** < 10 nm

**Optical signal collection** Collimated SMA input

**Power supply** 12 Vdc with power supply included

**Maximum absorbed power** 10 W



**Measurement geometry** Multi-level ND attenuation.  
Continuous optical attenuation via input beam reduction along the X axis or in predefined steps (contextual attenuation along X and Y)

**Reference acquisition** Automatic internal references

**Communication channel** RS422 / RS485 / RS232  
(to be determined while ordering)



#### Software

**Poliprocess** For in-line measurements to interface with PLC automation. Available for continuous acquisitions for filtering and for *real-time* chemometric predictions.

**PoliADK** Windows ADK for software developers. ADK is able to independently manage optimal instrument settings, including calculating optimal integration time. The reference acquisition procedure is also automated and is used to apply pre-treatments such as spectra *smoothing* or interpolation. It also extracts *raw* and post-processed spectral information.

*Our software is compatible with SensoLogic and UCal chemometric calibration suites.*



**Dim.** 110 x 10.5 x 19.5 cm (l x h x w)

**Weight** 750 g

**Material** Anodised aluminium



polispecVIS-NIT  
industry



Maintaining the same industrial and compact design as the standard version, **Polispec LITE Industry CONTACTLESS** is a very versatile system for application on all processes where non-contact measurement is necessary. Adaptable to a wide range of distances from the product, this product line is equipped with its own illuminant with internal feedback for automatic references during the process. The large framed area and the optical geometry that characterize it, allow optimal work even if the relative distance between the product and the measurement optics undergoes variations.

02  
Polispec industry

02.05

LITE  
industry

CONTACTLESS



**Dim.** 40,5 x 8,5 x 25 cm (l x h x w)

**Weight** 5 kg

**Material** Anodised and/or painted aluminium

**IP rating** Instrument IP68 (standard) / IP6X + IPX9K (upon request); CONTACTLESS module IP55



**Sensor** CMOS, 256 pixel

**Spectrum range** Available in various ranges between 580-1080 nm

**Average numerical resolution** < 2 nm

**Average HWHM optical resolution** < 8 nm (in range 640-1050 nm)

**Optical signal collection** Direct optical coupling

**Power supply** Instrument: 12 Vdc with power supply included, interchangeable internal battery CONTACTLESS module: 12 Vdc 20 W with dedicated power supply

**Maximum absorbed power** Instrument 20 W, CONTACTLESS module 20 W



**Type of measurements** Reflectance

**Measurement geometry** Angular / Diffuse

**Measurement references** Internal and automatic

**Communication channels \*\*** Standard RS422  
\*\* also available in ethernet configuration or RS485

**Source type** Replaceable halogen lamp

**Working distance** From 20 cm to 60 cm

**Relative amplitude change ratio: lower distance** < 1:1



**Controls and signals**

Available in two versions, with or without processing unit integrated into the instrument case



**Software**

**Poliprocess** Process analysis software compatible with SensoLogic and UCal Chemometric suites, interface available for ISObus and PLC systems (modbus over TCP/IP or S7).



**OPTIONAL CONFIGURATIONS**

**No options** An external processing unit is required in this configuration

**Option NC** In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with CANbus communication channel

**Option NH** In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with Ethernet communication channel

By exploiting the entire spectral range of Polispec NIR and borrowing the same industrial design and compactness of the standard version, **Polispec NIR Industry CONTACTLESS** is a very versatile system for application on all processes where non-contact measurement is necessary. Adaptable to a wide range of distances from the product, this product line is equipped with its own illuminant with internal feedback for automatic references during the process. The large framed area and the optical geometry that characterize it allow optimal work even if the relative distance between the product and the measurement optics undergoes variations.

02  
Polispec industry

02.06

NIR  
industry

CONTACTLESS



**Dim.** 40,5 x 8,5 x 25 cm (l x h x w)

**Weight** 4,3 kg

**Material** Anodised and/or painted aluminium

**IP rating** Instrument IP68 (standard) / IP6X + IPX9K (upon request); CONTACTLESS module IP55



**Sensor** InGaAs, 256 pixels, with single-stage Peltier cooling

**Spectrum range** 900-1700 nm

**Average numerical resolution** 3.2 nm

**Average HWHM optical resolution** 3.25 nm

**Optical signal collection** Direct optical coupling

**Power supply** Instrument: 12 Vdc with power supply included, interchangeable internal battery CONTACTLESS module: 12 Vdc 20 W with dedicated power supply

**Maximum absorbed power** Instrument 20 W, CONTACTLESS module 20 W



**Type of measurements** Reflectance

**Measurement geometry** Angular / Diffuse

**Measurement references** Internal and automatic

**Communication channels \*\*** Standard RS422  
\*\* also available in ethernet configuration or RS485

**Source type** Replaceable halogen lamp

**Working distance** From 20 cm to 60 cm

**Relative amplitude change ratio: lower distance** < 1:1



**Controls and signals**

Available in two versions, with or without processing unit integrated into the instrument case



**Software**

**Poliprocess** Process analysis software compatible with SensoLogic and UCal Chemometric suites, interface available for ISObus and PLC systems (modbus over TCP/IP or S7).



**OPTIONAL CONFIGURATIONS**

**No options** An external processing unit is required in this configuration

**Option NC** In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with CANbus communication channel

**Option NH** In this configuration an internal processing unit is installed (removable to leave room for the battery) making the instrument a plug & play unit; The instrument is equipped with Ethernet communication channel





Polispec e  
Polispec industry

# SOFTWARE



POLIDATA



POLIPROCESS



SP3  
MANAGER



CMM



CME

## SOFTWARE

### POLIDATA



This is our **main software for portable use of Polispec instruments** and it offers an interface designed for use on both tablet and desktop. It is available in various languages and with two prediction engines, SensoLogic and UCal. Its basic functions are:

- **Quantitative chemometric analysis:** by choosing a rented and built chemometric model, a product can be analysed with different sampling methods (single swipe, multiple swipe, multipoint). The results of the analysis are instantly visible, can be exported in various formats (DAT, CSV/XML, compatible with different formulation software), and can be saved in an archive
- **Analysis archive:** the generated and saved data can be kept and consulted, reports can be printed, and analyses on the same product type can be compared
- **Spectra acquisition:** the acquired spectra can be saved to create a dataset, with export formats such as SP3 (proprietary binary software) or CSV
- **Instrument diagnostics:** it contains two functions for instrument diagnostics,
  - **Check cell**, a guided procedure that allows the user to check proper spectral calibration on the instrument
  - **Diagnostic tool**, a guided procedure that allows the user to make sure the main components of the instruments work (buttons, fans, internal electronics)

### POLIPROCESS



This is the **main software to use instruments on processes** (industrial plants or machinery) requiring continuous product analysis. The software is modular and can be configured or expanded (by custom-developing new modules) to adapt to specific needs.

The main reference modules are:

#### **GPS module**

which acquires NMEA data from GPS antennas via serial connection and uses the position received to geo-reference the analyses

#### **Datalogger module**

which saves the analyses in a file in CSV or KML (Keyhole Markup Language) formats

#### **ISObus module**

which manages the analyses via an application on the Virtual Terminal (VT); the acquired data are saved from the device *task controller* and can be exported in ISOXML file and used in most analysis platforms. The VT interface can be used to control the process completely: selecting the product to analyse (chemometric model to use), displaying instantaneous and average analysis (of the process), receiving notifications and alarms for any problems

#### **PLC module**

which controls the measurement process via PLC using two different protocols: modbus over TCP/IP or S7 and ISO over TCP/IP or S7 (Siemens S7). The measurement process reports the analysis values and the system status on registers that can be configured during installation

## SP3 MANAGER



This is **software to import spectra saved in SP3 (or CSV) format and process them**. The free version allows users to open SP3 files and convert them to CSV format to be used in conventional spreadsheets.

The licenced version has additional functions available:

- rename samples
- create an average of the samples with the same name
- export in various formats

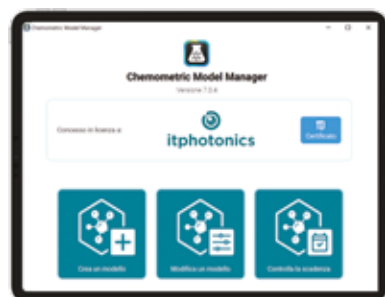
(CSV, CSV for Matlab or Octave, DAT, CPF)

This software also has **an analysis function** available (which requires a specific licence): the selected spectra can be predicted using a chemometric model, the analyses can be exported in CSV format or copied/pasted directly into a spreadsheet. There is the option of whether or not to display the statistical parameters of the analyses for each constituent.

Finally, there is a **dataset function** available (which requires a specific licence): by opening an SP3 file and adding the analyses (copying from a spreadsheet or importing the file in CSV format), a dataset file can be created and exported in DAT or CPF (SensoLogic) format.

## CMM

(Chemometric Model Manager)



**This software allows users to prepare chemometric models that can be used by the previously described software** (Poliprocess). It can only be operated via a certificate that establishes the user and the accessory functions (expiry date, global standardisation...).

This software has the exclusive feature of being able to use a method for **"global standardisation"**, which is a special algorithm we have developed to replicate use of the same calibration model on multiple instruments without having to adapt the instrument or the calibration curve itself.

## CME

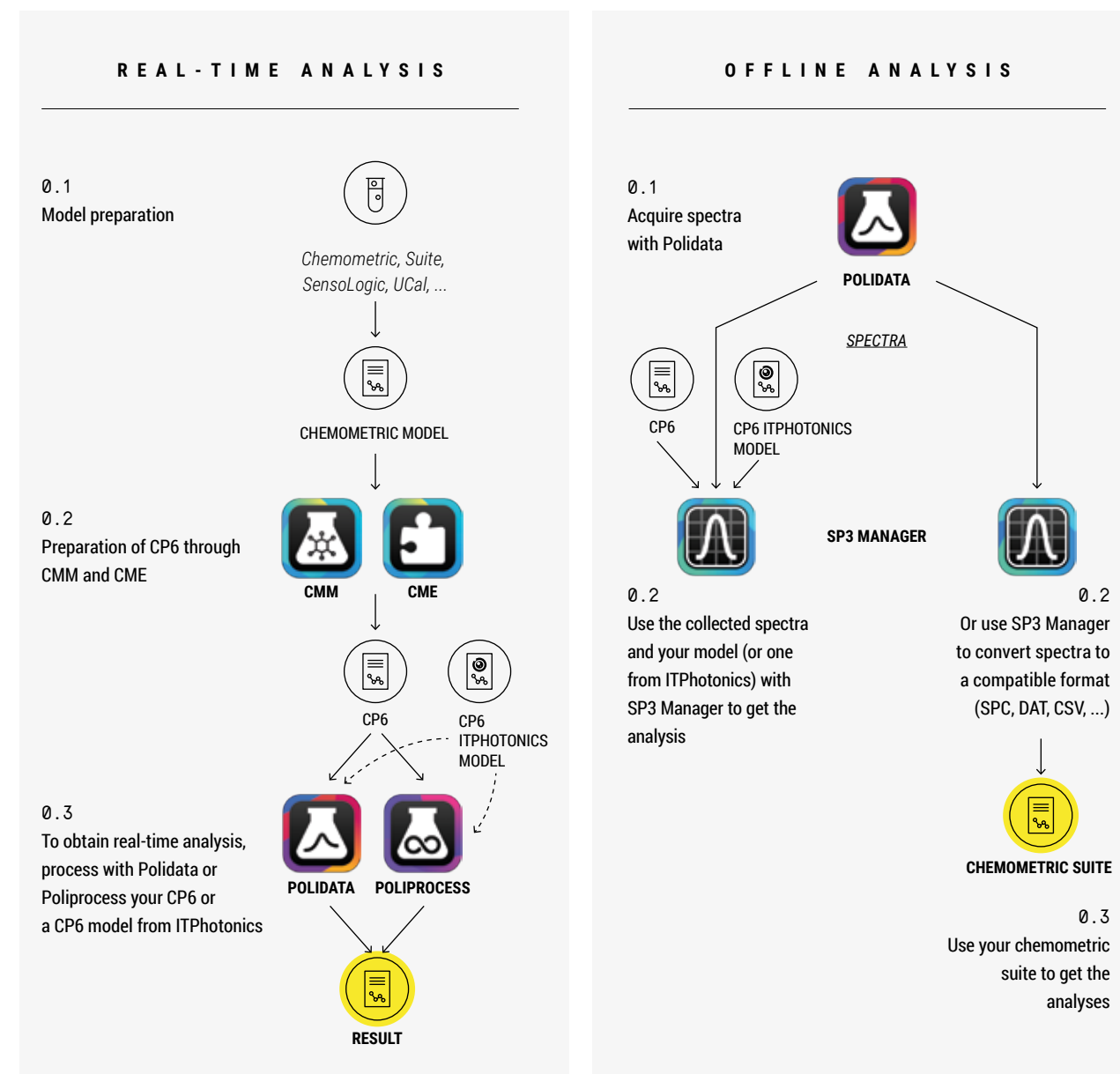
(Chemometric Model Extension)



**CME** (Chemometric Model Extension) **software works synergistically with CMM software to enrich CP6 models with a number of functional extensions**, including:

- Addition of a multilingual vocabulary for translating chemometric models and associated parameters
- Ability to add formulas to analysis reports
- Ability to thematically group results in reports
- Addition of information related to the chemometric model (units of measurement, range of values in calibration...)

## ITP SCHEME





## STANDARD GLUED - ON SCANNING WINDOW



In the standard configuration, the sapphire scanning window is glued directly onto the probe with special glues that ensure resistance and adherence.

## MECHANICALLY ATTACHED SCANNING WINDOW



However, for more difficult settings or where, for legislative reasons, a glued-on window cannot be used, there is a special probe available where the scanning window is fastened mechanically.

## FLANGED PROBE



The flanged probe is designed for use in processes that require measurement of liquids. Thanks to its specially designed gasket system, it ensures a reliable seal even at medium to high pressures.

## Focus

### PROBE

for:

*Polispec*

*Polispec industry*

All the instruments in the Polispec and Polispec industry lines can be fitted with different scanning window configurations in order to make the system compatible for manual use, in-line installation, or mixed use.

Depending on what is needed, the instruments can be configured with the following types of scanning windows:

- flat (0 mm)
- extended probe (2.5 mm, 11 mm, 14 mm, 17 mm and custom)

The probes, with a standard diameter of 50 mm, are usually fitted with a sapphire scanning window and can be made from various materials, depending on the application requirements.



Depending on the requirements, the probes can be made from various materials (i.e., food grade POM, stainless steel, hardox) in order to ensure the system is compatible in terms of food safety, thermal insulation, and resistance to corrosion or wear.

P o l i s p e c

03

O T H E R  
P R O D U C T S ,  
A C C E S S O R I E S  
A N D E X T E N S I O N  
K I T S

## 03

OTHER  
PRODUCTS,  
ACCESSORIES  
AND  
EXTENSION  
KITS

HARDWARE AND SOFTWARE  
SYSTEMS TO INTERFACE  
POLISPEC INSTRUMENTS WITH  
OPERATING MACHINERY

INTERNAL  
PROCESSING UNIT  
MODULE

The new instruments in the Polispec and Polispec Industry line, namely Polispec Lite, Polispec NIR and Polispec NIRe also in contactless versions, can be equipped with an internal processing unit that greatly simplifies instrument integration, both on production lines and on operating machines. Thanks to this feature, instrument operation becomes a plug-and-play process.

This new module allows users to easily configure instrumentation directly online, without having to resort to external data processing systems such as a

Panel PC or an Iso Box. Even in "hybrid" configurations, where the instrument is used as both a line instrument and a portable instrument, the processing unit can be easily removed to make room for battery insertion.

The Polispec instrument, equipped with the internal processing module, can be configured in standard versions (RS422) or with Ethernet and CAN-BUS options. To carry out the configuration, please refer to the options available in the instruments, as described in sections 01 and 02 of this document.

## 03.01



**ISO BOX** is an intelligent control unit that, in addition to managing the power supply to the Polispec sensors when installed on self-propelled or towing machinery, **processes the signals it receives from the sensor and integrates sensor operation in the machine ISObus network.** The same control unit can be used to integrate systems in proprietary CANbus networks.



**MULTI-PURPOSE  
“ADD-ON”  
ACCESSORIES**



03.18

**TABLE STAND WITH ROTATING  
SAMPLING CELL**

This support transforms Polispec instruments into desktop measurement systems. It is a simple structure with a modern design that hold the spectrophotometer vertically to be used as a real benchtop system. A practical measuring cell allows to contain the sample while it is rotating for the measure. Once the measurement is completed, the cell is removed allowing easy cleaning of the plate also thanks to the special slide discharge.



03.19

**TABLETOP STAND FOR  
VERTICAL POSITIONING**

This desktop accessory makes it easy to quickly position the instrument vertically to measure small samples, cells, Petri dishes, or to use other accessories.



03.06

**PROTECTIVE PLATE KIT**

The base of this magnetically attachable accessory is wider than the instrument itself and extends with two practical folds on the front and back of the instrument in order to protect it from stubborn dirt during use. The accessory is designed to allow the system to be cleaned quickly when it is used on muddy or slimy matrices.



03.07

**MAGNETIC FILLER  
ELEMENT**

This filler element easily attaches to the bottom of the instrument magnetically and allows instruments with an extended probe installed on them to be used portably. The accessory is compatible with the **Polispec LITE**, **Polispec NIR** and **Polispec NIRe** instruments.





03.16

### CONVEX SAMPLE CONTACT PROBE WITH REDUCTION OF THE FRAMED AREA

This magnetically attachable accessory allows the instrument's framed area to be reduced to an area of Ø5 mm or Ø10 mm. Very practical to use, it also lends itself well to measuring convex surfaces like, for example, small fruits and solid objects with non-planar surfaces.



03.05

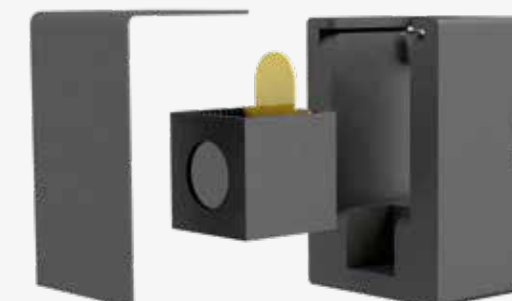
### MAGNETIC KIT FOR LIQUID READING ON "CUVETTE"

This accessory, which is compatible with **Polispec LITE**, **Polispec NIR** and **Polispec NIRE** instruments in portable configuration, consists of a magnetic cuvette-holder support that attaches to the front of the instrument's scanning window and measures liquids, both in reflectance and transreflectance, as it fits a reflector that can be removed from the cuvette and positioned at a variable optical path.

THE PRACTICAL SCREW  
SYSTEM ALLOWS THE LENS  
TO BE REPLACED QUICKLY TO  
CHANGE THE FRAMED AREA  
(Ø5 mm, Ø10 mm AND CUSTOM  
Ø AVAILABLE)



THE CUVETTE, ADJUSTABLE  
ON BOTH SIDES, ALLOWS  
THE REFLECTOR TO BE  
POSITIONED AT A VARIABLE  
OPTICAL PATH, WHICH CAN BE  
INCREASED WITH  
2 mm PITCH



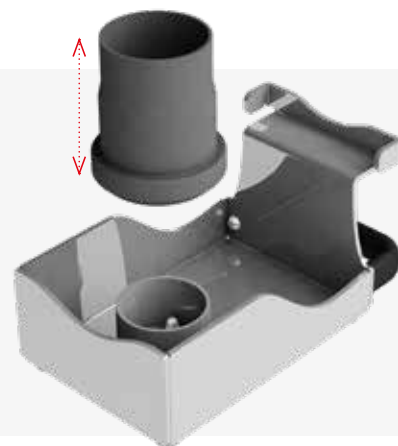


03.20

### CUP FOR LIQUID READING WITH DRIP TRAY

This accessory is used to analyse liquid samples of varying nature. A holding cup, located inside a tray, contains liquid that makes use of the “meniscus effect” to adhere to the scanning window perfectly. Any excess liquid that could spill out is collected by the surrounding tray that can be easily removed, emptied, and washed.

THE CUP IS 80 mm TALL  
AND IS SUITABLE BOTH  
FOR INSTRUMENTS WITH H0  
PROBES AND INSTRUMENTS  
WITH EXTENDED PROBES



03.21

### KIT FOR MEASUREMENT OF LIQUIDS IN TEST TUBE

This practical accessory allows the measurement of small quantities of liquid inserted into a washable glass test tube. The Polispec device is placed vertically so as to accommodate a magnetic support that holds the test tube. The measurement is then carried out in transfectance, inserting a special golden reflector immersed in the liquid. The optical path of the reflector can be adapted to specific needs.

EXTENSION AND  
ACCESSORY KIT

PORTABLE  
KIT

03.11

the instruments described below can also be purchased separately

03.08

AC 100/240 V to DC 12 V power supply +  
case + WiFi antenna + USB cable +  
Polidata SW



+

03.09

7" industrial tablet



+

03.10

kit with 2 batteries and charging station



PROCESS  
KIT

03.12

Case + WiFi antenna (in case of standard  
instrument) + USB cable + Poliprocess SW



WIRING KIT

03.13



Wiring kit, standard length 8 m. Request for cables of different lengths should be  
specified when ordering + description of possible cable configurations:

- 01. **PSF22CBL001.08**  
RS 422 + power and ignition control cable, complete with pair of Deutsch  
(DT04-3P) M+F connectors not assembled
- 02. **PSF22CBL002.08**  
Ethernet cable + power and ignition control, complete with pair of unmounted  
Deutsch (DT04-3P) M+F connectors and RJ45 connector
- 03. **PSF22CBL003.08.F**  
CANbus cable + power supply and ignition control , with Deutsch 6-pin  
connector (DT04-6P)
- 04. **PSF22CBL003.08.F.T**  
CANbus cable + power supply and ignition control, with Deutsch 6-pin  
connector (DT04-6P), terminated 120 ohms on instrument side
- 05. **PSF22CBL004.08.F**  
CANbus cable + power and ignition control, with IN-CAB 9p connector  
installed
- 06. **PSF22CBL006.10.08**  
RS422 cable + power supply and ignition control, complete with RS422-232  
converter and D-SUB9F connector

VEHICLE DOCKING  
STATION KIT

03.14

Docking station vehicle + high density  
cable



KIT DOCKING  
STATION VESA

03.15

Docking station VESA



P o l i s p e c

0 4

I N S T A L L A T I O N  
K I T

# 04

## INSTALLATION KIT for:

*Polispec Lite*  
*Polispec NIR*  
*Polispec NIRe*

All instruments in the Polispec line have various installation kits available to **guarantee proper system installation, based on where they are situated, on operating machinery or on industrial production lines.**

Their purpose is to guarantee safe, proper installation and, depending on the requirements, to make it easy to remove the sensor for cleaning, diagnostics, or use as a portable system.



This kit consists of an **mounting system with brackets to install Polispec instruments in-process or on operating machinery** (for example, a forage harvester) and in situations requiring horizontal installations that involve quickly removing the instrument for inspection or for use as a portable system.

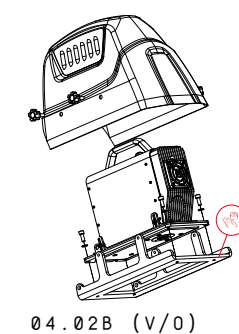
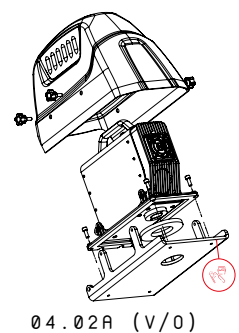
INSTALLATION  
KIT

04.01

KIT

**HORIZONTAL  
INSTALLATION  
WITH ROUND HOLE AND  
WITH BRACKET  
COUPLING**





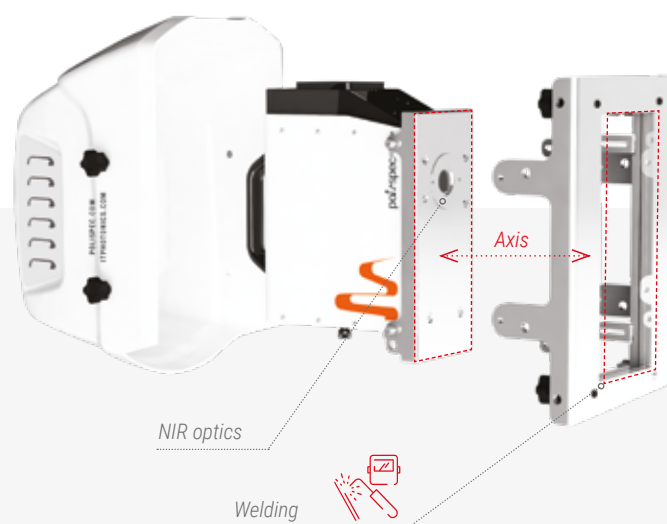
INSTALLATION  
KIT

04.02

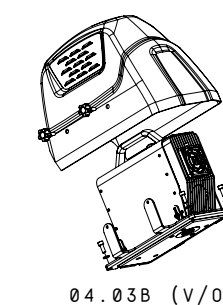
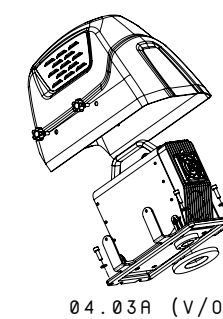
KIT

Available with  
vertical or  
horizontal (V/O)  
option

Mounting system complete with adapter flange to weld, available in various thicknesses (6 mm standard). Recommended when installing on surfaces that are not flat or insufficient to sustain direct installation and in cases requiring the instrument to potentially be removed for portable use.



VERTICAL INSTALLATION  
WITH RECTANGULAR HOLE  
AND WITH SUPPORT FROM  
THE SELF-SUPPORTING  
COVER



KIT  
D'INSTALLAZIONE

04.03

KIT

Available with  
vertical or  
horizontal (V/O)  
option

This mounting kit is designed for the installation of Polispex instruments on flat surfaces and features a convenient integrated system for attaching the protective cover.

The four slots located on the sides of the Polispex instrument allow flexible adaptation to different installation thicknesses, providing a versatile solution for various applications. The installation procedure is simplified thanks to the four M8 anchor holes that ensure simple and reliable system attachment.

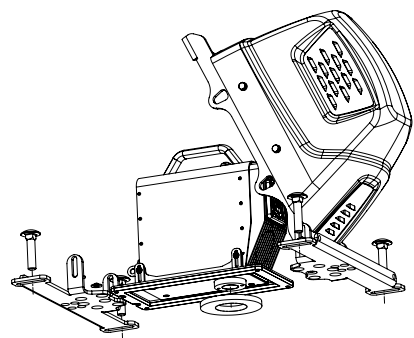




SUMMARY TABLE OF THE  
INSTALLATION OPTIONS  
PREVIOUSLY ILLUSTRATED

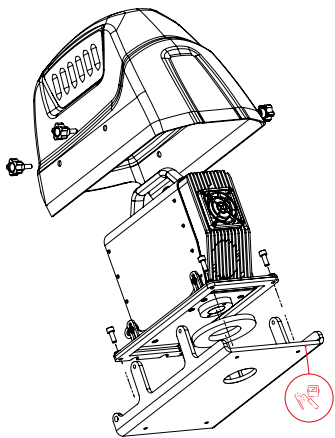


CIRCULAR  
HOLE



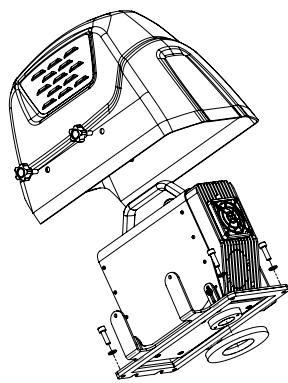
04.01A

Horizontal **installation** with round hole and with **bracket coupling** (04.01 installation type)



04.02A (V/O)

Vertical **installation** fitted with **plate with round hole to weld** to adapt the installation surface

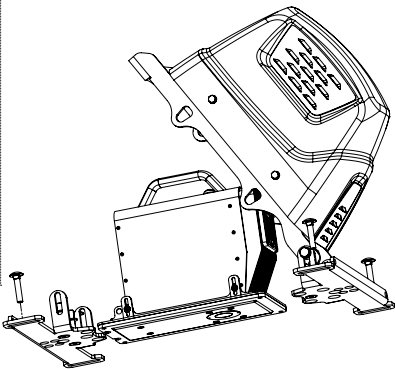


04.03A (V/O)

Vertical **installation** with round hole and with **support from the self-supporting cover**

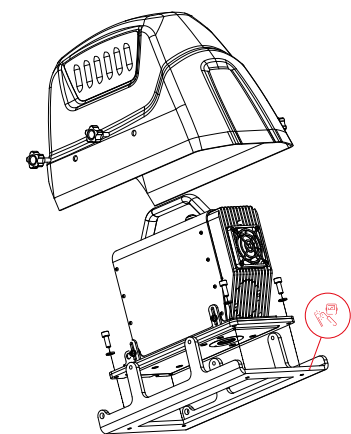


RECTANGULAR  
HOLE



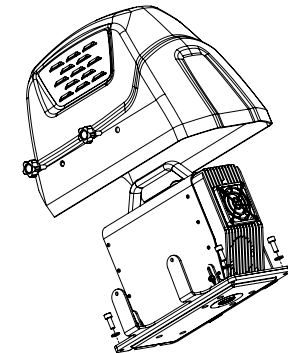
04.01B

Horizontal **installation** with rectangular hole and with **bracket coupling**



04.02B (V/O)

Vertical **installation** fitted with **plate with rectangular hole to weld** to adapt the installation surface



04.03B (V/O)

Vertical installation **with** rectangular hole and with **support from the self-supporting cover**

OPTIONAL



HORIZONTAL

Installation orientation options:

- V: vertical installation
- O: horizontal installation

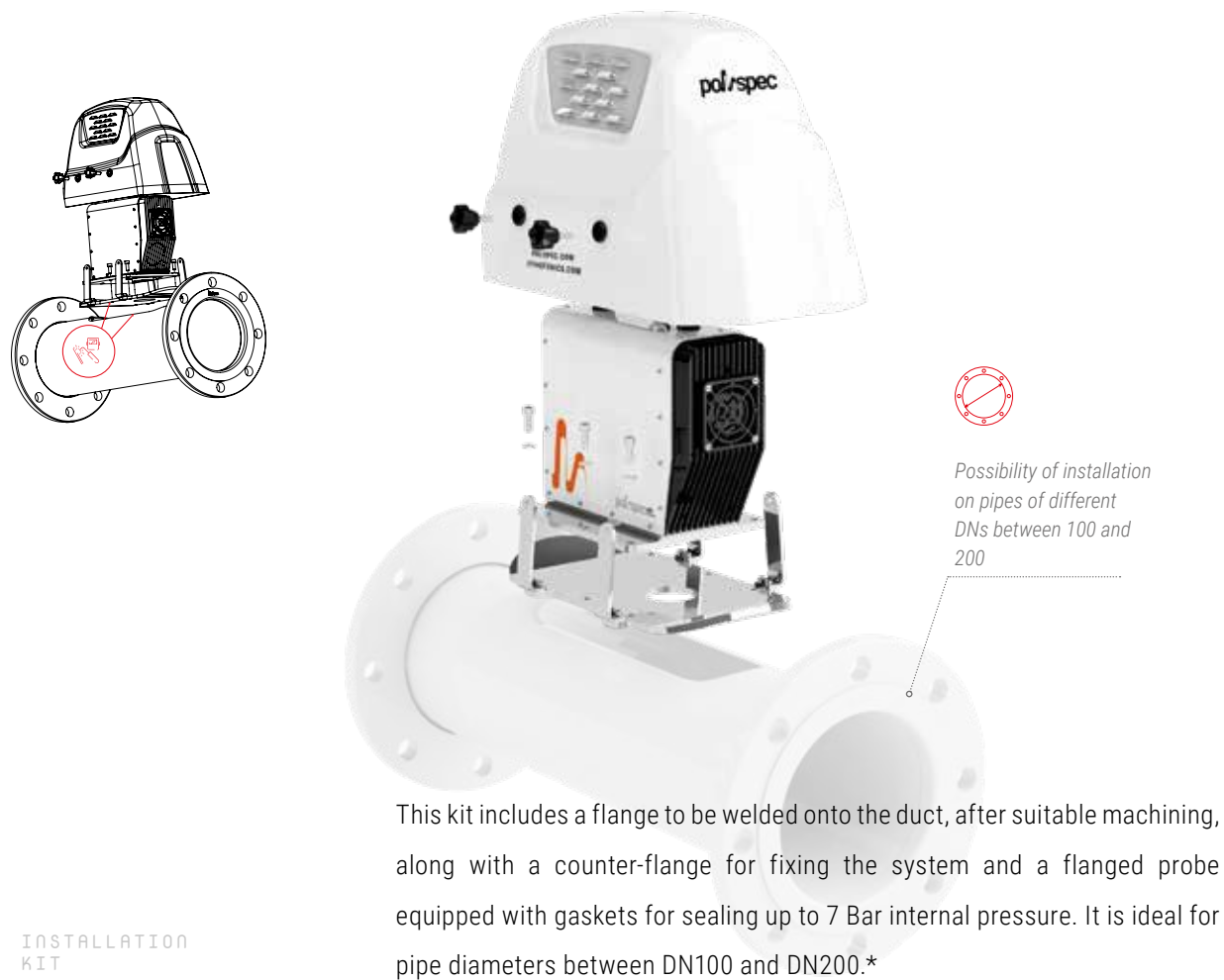


VERTICAL

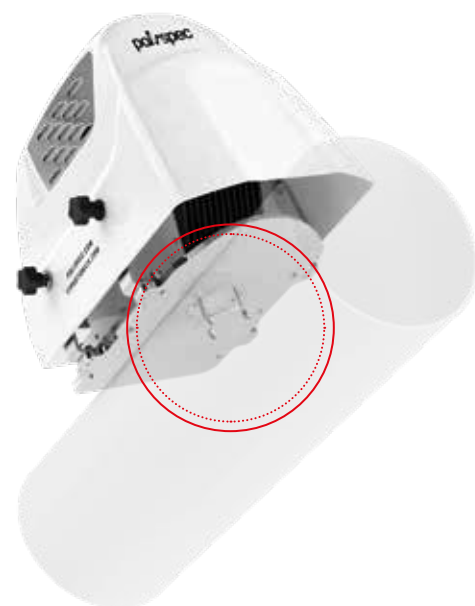


Protective cover with **optional forced ventilation**, designed for settings that must ensure forced air circulation to better dissipate the heat generated by the instrument °T > 40-45° C





*\*For pipe diameters other than DN100-DN200, pipe machining and flange application strategies are required and must be agreed upon. It is also possible to request a section of pipe already prepared for Polyspec instrumentation installation and flanged on both sides. For special applications, a reflector probe version with adjustable installation distance is available.*

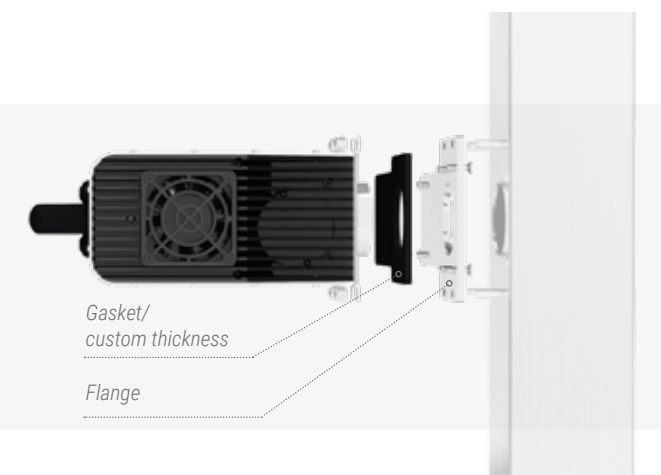


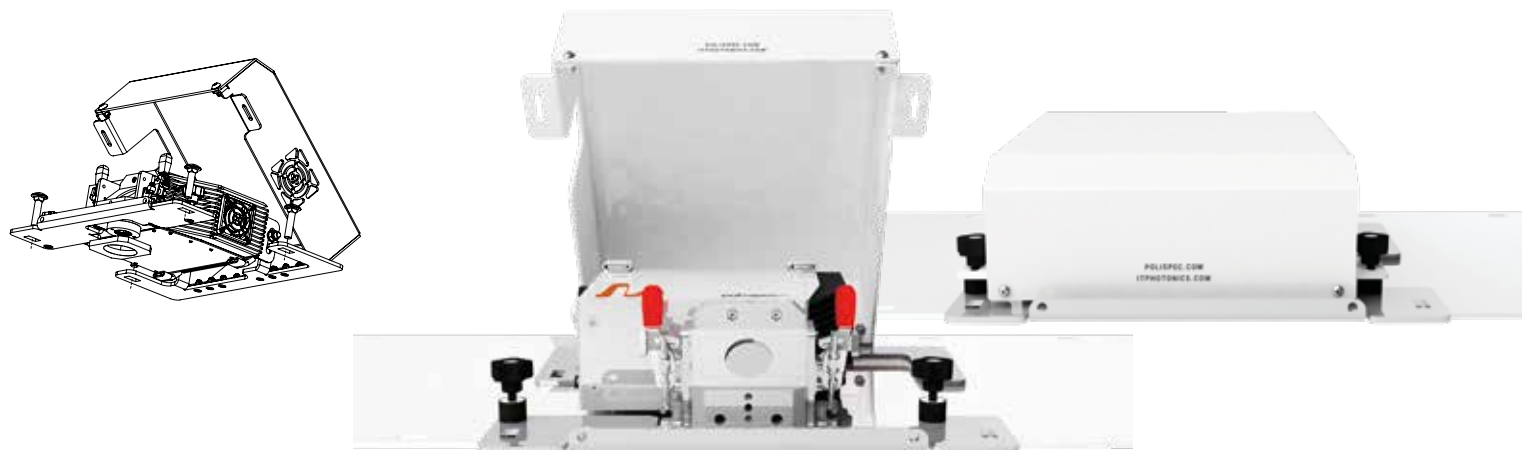
In certain processes, it may become essential to intensify the interaction of infrared energy with the liquid, either because the liquid is particularly transparent or because it absorbs considerable energy and has few scattering properties. For this reason, it may be desirable to install a reflector inside the process, the purpose of which is to amplify the scattering of energy and to prolong the optical path of the energy itself, promoting greater interaction with the liquid.



This flat flange universal coupling system, compatible with instruments in the **Polyspec Lite**, **Polyspec NIR** and **Polyspec NIRe** lines, makes it possible to install the systems even in the tightest spaces. This flat flange can be adjusted to every position and is attached at the base of the instrument, which allows the system to be anchored using the four through-holes for M5 screws and short “wings” that protrude sideways with reference to the instrument.

THE SYSTEM **MAKES IT EASY TO INSTALL ON** SQUARE PIPING, HOPPERS, OR FLAT SURFACES REGARDLESS OF THE ORIENTATION (VERTICAL, HORIZONTAL, LATERAL)





This installation kit for 90° positioning, suitable for **Polispec Lite**, **Polispec NIR** and **Polispec NRe** instruments, allows the system to be positioned horizontally and requires a return probe for 90° positioning (03.17). The kit is equipped with a protective box in white plastic and is designed to allow the system to be removed quickly for cleaning and maintenance.

#### ACCESSORY

#### 90° ANGLE ROTATION OPTIC FOR MOUNTING THE INSTRUMENT HORIZONTALLY

This element allows both the sample irradiation light beam and the collected signal to be deferred by 90°, effectively allowing the instrument to be positioned horizontally with respect to its original optical geometry.



THIS ACCESSORY CAN HOUSE DIFFERENT SIZES OF PROCESS PROBES.



**AGS (Active Grain Sampler)** is an accessory designed to install Polispec systems on combines or grain elevators. **It operates to ensure continuous, representative product flow for the corresponding measurement**, which self-regulates based on the instantaneous flow of material in the main duct.

INSTALLATION  
KIT

04.06

KIT

INSTALLATION  
KIT

04.07

KIT

## SECTORS OF APPLICATION

Our passion and our specialized expertise allow us to create **targeted and effective solutions** to meet the needs, even the most particular ones, in the field of spectrophotometric analysis, technological integration and electronic and software applications. **We are able to reach even the most ambitious objectives, regardless of the application sector**, thanks to the distinct professionalism that distinguishes us and the recognized quality of our technology.



INDUSTRIAL



AGRICULTURAL  
AND AGRI-FOOD



CHEMICAL AND  
SCIENTIFIC

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I T P H O T O N I C S . C O M