

POLISPEC.COM
ITPHOTONICS.COM



PRODUCTS CATALOGUE

REFERENCE INSTRUMENTS
FOR SPECTROPHOTOMETRIC ANALYSIS

Polispec
Polispec industry
Other products
Mounting kit
Solutions for agriculture
Calibration curves



POLISPEC.COM



POLISPEC
Getting insight

ITPHOTONICS.COM

We are a dynamic and creative company founded in 2012, specialising in spectrophotometry and applied electronics. We use our theoretical and practical knowledge and methodologies to design and build electronic systems and measuring instruments. Our core business is applied spectrophotometry, in its various forms and for each application sector.

We have created **Polispec (Portable and On-Line SPECTrophotometer)**, a line of compact spectrophotometers with an industrial design, conceived and built for both portable use and online installation and available for different wavelength ranges. Their operation is based on the interaction of a light source with the molecules and with the chemical bonds that characterise the matrix to be analysed, thus performing both quantitative and qualitative measurements.

The instruments of the Polispec line are designed to **guarantee their intensive use in all processes in which immediate and precise measures are required for the management of variables and for self-control systems.**



. DESIGN



. QUALITY



. SOFTWARE INNOVATION



L I T E



V I S - N I T



N I R | | N I R e



P o l i s p e c

0 1

I N S T R U M E N T S
R A N G E


Polispec LITE is a reflection spectrophotometer, with extremely compact dimensions, equipped with an interior lighting system and automatic references. The casing is made entirely of anodised aluminium, while a large heat sink is located at the front to remove the heat generated by the lighting system. The entire system is designed for use in different environments and under different working conditions thanks also to the possibility of creating the external surfaces and contact surfaces in different materials.


01
Polispec


01.01


LITE



	Sensor	CMOS, 256 pixel
	Spectral range	Available in various ranges between 400-1100 nm
	Average numerical resolution	< 2 nm
	Average optical resolution HWHM	< 8 nm (in range 640-1050 nm)
	Optical signal collection	Direct optical coupling
	Supply	12 Vdc power supply with supplied power supply, interchangeable rechargeable battery
	Maximum absorbed power	15 W

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

	Commands and signals	Hardware button dedicated to the acquisition of references. Hardware button dedicated to the measurement acquisition. Light and acoustic signalling of the acquisition status.
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	Software	
	poliDATA	Data acquisition and chemometric prediction software compatible with the SensoLogic and UCal Chemometric suites.
	poliPROCESS	Process analysis software compatible with the SensoLogic and UCal Chemometric suites, interface available for ISObus and PLC systems (modbus over TCP).



Dim. 23.4 x 18.1 x 8.5 cm (l x h x w)

Weight 2.4 kg

Material Anodised aluminium and/or painted

IP degree 54

polispec LITE

Polispec NIR is the instrument of excellence of the range, it is a robust and compact spectrophotometer, made both for portable use and for in-process installation. It has been designed considering various technological approaches that make it highly performing in terms of sensitivity, operational dynamics and signal cleanliness.


These qualities make **Polispec NIR** suitable for analysing very different matrices, from the most reflective to the most absorbent, without the need for different versions of the instrument for each application area.


01
Polispec


01.02


NIR



	Sensor	InGaAs sensor, 256 pixels, cooled with single Peltier stage
	Feedback cooling control system	Feedback, stability T < 0,01 K
	Spectrum range	900-1700 nm
	Average numerical resolution	3.2 nm
	Average optical resolution HWHM	3.25 nm
	Optical signal collection	Direct optical coupling
	Supply	12 Vdc power supply with power supply provided, interchangeable rechargeable battery
	Maximum absorbed power	20 W

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

	Commands and signals
	Hardware button dedicated to the acquisition of references.
	Hardware button dedicated to the measurement acquisition.
	Light and acoustic signalling of the acquisition status.

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



Dim. 21.6 x 21.3 x 8.5 cm (l x h x w)

Weight 3.2 kg

Material Anodised aluminium and/or painted

IP degree IP68 (standard) / IP6X + IPX9K (on request)

polispecNIR

Polispec NIRe is a spectrophotometer with extended spectral range, robust and compact, which integrates reflection measurement optics (also configurable for transmission or contactless applications). Designed for both manual use and for in-process installation, it is made with special technological devices such as to make it highly performing in terms of sensitivity, operating dynamics and signal cleaning. These qualities make **Polispec NIRe** suitable for analysing very varied matrices, from the most reflective to the most absorbent, without the need to have different versions of the instrument for each application area.

01
Polispec

01.03

NIRe



Sensor dual-chip sensor, 512 pixels,
cooled with double Peltier stage

Feedback cooling control system Feedback, stability T < 0,03 K

Spectrum range 930-2180 nm

Average numerical resolution 2.4 nm

Average optical resolution HWHM 4 nm

Optical signal collection Direct optical coupling

Supply 12 Vdc power supply with power supply provided,
interchangeable rechargeable battery

Maximum absorbed power 24 W



Type of measurements Reflectance / transmittance *
** may require external accessories*

Measurement geometry Diffuse / 0°

Measurement references Internal and automatic

Communication channels** Standard WiFi + RS422 / RS485
*** also available in WiFi + Ethernet configuration*

Source type*** Replaceable halogen lamp
**** internal back-up lamp option available*



Commands and signals

Hardware button dedicated to the acquisition of references.
Hardware button dedicated to the measurement acquisition.
Light and acoustic signalling of the acquisition status.



Software

poliDATA Data acquisition and chemometric prediction software compatible with the SensoLogic and UCal Chemometric suites.

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



Dim. 21.6 x 21.3 x 8.5 cm (l x h x w)

Weight 3.3 kg

Material Anodised aluminium and/or painted

IP degree IP68 (standard) / IP6X + IPX9K (on request)



Polispec VIS-NIT is an extremely robust spectrophotometric sensor, designed to be connected via fibre optics to a variety of measurement probes and lighting sources. Thanks to its particular compactness, **Polispec VIS-NIT** can be easily integrated into any point of a production line. The casing is made of anodised aluminium and is available with different levels of protection from liquids and dusts. Fibre optic 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 pixel

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

Average numerical resolution < 2 nm

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

Optical signal collection Collimated SMA input

Supply 12 Vdc power supply with supplied power supply

Maximum absorbed power 10 W



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

Acquisition of references Automatic internal references

USB communication channel USB



Software

poliPROCESS for in-line measurements for interfacing with PLC automation. Available for continuous acquisitions for filtering and for real-time chemometric predictions.

poliDATA fully automated software for stand-alone and laboratory acquisitions and chemometric predictions.

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

ITPhotonics software is compatible with the SensoLogic and UCal Chemometric calibration suites.

polispecVIS-NIT

SOFTWARE

poliDATA



It is our main software for portable use of Polispec instruments and offers an interface designed for use on both tablets and desktops. It is available in several languages and can optionally be configured for compatibility with two prediction engines, Sensologic and UCal. Its basic features are:

- **Quantitative chemometric analysis:** by choosing a rented or self-made chemometric model, it is possible to analyse a product with different sampling methods (single swipe, multiple swipe, multipoint). The results of the analysis are instantly visible, can be exported in various formats (PDF reports, DAT files, CSV/XML compatible with different formulation software) and can be saved in an archive
- **Analysis archive:** it is used to keep and consult the data generated and saved, to print reports, to send them via a simple QRcode and to compare different analyses with each other
- **Acquisition of spectra:** it is used to save the acquired spectra to create a dataset, with export formats such as SP3 (proprietary binary software) or CSV
- **Instrument diagnostics:** it contains two functionalities for instrument diagnostics:
 - **Check cell**, a guided procedure, that allows the user to verify the correct spectral calibration of the instrument
 - **Diagnostic Tool**, a guided procedure that is used to check the operation of the main components of the instrument (buttons, fans, internal electronics...)

SP3 MANAGER



It is a software that is used to import spectra saved in SP3 (or CSV) format and to process them. In its free version, it is used to query SP3 files and to convert them into CSV format to be used with common spreadsheets.

In the licensed version additional features are available:

- the renaming of samples
- the creation of an average of the samples with the same name
- exporting in different formats (CSV, CSV for Matlab or Octave, DAT, CPF)

The analysis functionality is also available for this software (it requires a specific licence): the selected spectra can be predicted using a chemometric model; the analyses can be exported in CSV format or copied directly into a spreadsheet and it is possible to choose whether or not to display the statistical parameters relating to the analyses of each constituent. Finally, the **dataset functionality is also available** (it requires a specific licence): by adding to a file containing spectra, SP3 or CSV, the relative analyses (copy from the spreadsheet or imported directly from the CSV file itself), it is possible to create a dataset file and export it in DAT or CPF * (* Sensologic) format.

C M M

(Chemometric Model Manager)



This software allows the preparation of chemometric models that can be used by the software described above (poliDATA and poliPROCESS).

Its operation depends on a certificate that determines the user and the accessory functions (expiry date, global standardisation...).

An exclusive of this software is the possibility of using a method for "global standardisation", that is in particular an algorithm, developed by us ITPhotonics, to replicate use of the same calibration model on multiple instruments without the need to adapt the calibration curve itself or the instrument.

Polispec
industry

02

INSTRUMENTS
RANGE

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

02
Polispec industry

02.01

LITE
industry



Adaptable to specific
installation needs



Dim. 23.4 x 18.1 x 8.5 cm (l x h x w)

Weight 2.4 kg

Material Anodised aluminium and/or painted

IP degree 54



Sensor CMOS, 256 pixel

Spectral range Available in various ranges between 400-1100 nm

Average numerical resolution < 2 nm

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

Optical signal collection Direct optical coupling

Supply 12 Vdc power supply with supplied power supply,
interchangeable rechargeable battery

Maximum absorbed power 15 W



Type of measurements Reflectance / transmittance *
** may require external accessories*

Measurement geometry Diffuse / 0°

Measurement references Internal and automatic

Communication channels** Standard RS422 / RS485
*** also available in Ethernet configuration*

Source type Replaceable halogen lamp



Commands and signals

Available in two versions with or without a processing unit integrated inside the instrument case.



Software

poliDATA Data acquisition and chemometric prediction software compatible with the SensoLogic and UCal Chemometric suites.

poliPROCESS Process analysis software compatible with the SensoLogic and UCal Chemometric suites, interface available for ISObus and PLC systems (modbus over TCP).

polispec LITE
industry

Polispec NIR is the instrument of excellence of the range, it is a robust and compact spectrophotometer, made for in-process installation. It has been designed considering various technological approaches that make it highly performing in terms of sensitivity, operational dynamics and signal cleanliness.

02
Polispec industry

02.02

NIR
industry



Adaptable to specific
installation needs



Dim. 21.6 x 21.3 x 8.5 cm (l x h x w)

Weight 3.2 kg

Material Anodised aluminium and/or painted

IP degree IP68 (standard) / IP6X + IPX9K (on request)



Sensor InGaAs sensor, 256 pixels, cooled with single Peltier stage

Feedback cooling control system Feedback, stability T < 0,01 K

Spectrum range 900-1700 nm

Average numerical resolution 3.2 nm

Average optical resolution HWHM 3.25 nm

Optical signal collection Direct optical coupling

Supply 12 Vdc power supply with power supply provided,
interchangeable rechargeable battery

Maximum absorbed power 20 W



Type of measurements Reflectance / transmittance *
* may require external accessories

Measurement geometry Diffuse / 0°

Measurement references Internal and automatic

Communication channels** Standard RS422 / RS485
** also available in Ethernet configuration

Source type Replaceable halogen lamp
*** internal back-up lamp option available



Commands and signals

Available in two versions with or without a processing unit integrated inside the instrument case.



Software

poliDATA Data acquisition and chemometric prediction software compatible with the SensoLogic and UCal Chemometric suites.

poliPROCESS Process analysis software compatible with the SensoLogic and UCal Chemometric suites, interface available for ISObus and PLC systems (modbus over TCP).

polispecNIR
industry

Polispec NRe industry is an extended spectral range spectrophotometer, robust and compact, which integrates a reflection measurement optics. Designed for in-process installation, it is made with special technological devices such as to make it highly performing in terms of sensitivity, operational dynamics and signal cleanliness.

02
Polispec industry

02.03

N I R e
industry



Adaptable to specific installation needs



Dim. 21.6 x 21.3 x 8.5 cm (l x h x w)

Weight 3.3 kg

Material Anodised aluminium and/or painted

IP degree IP68 (standard) / IP6X + IPX9K (on request)



Sensor dual-chip sensor, 512 pixels, cooled with double Peltier stage

Feedback cooling control system Feedback, stability T < 0,03 K

Spectrum range 930-2180 nm

Average numerical resolution 2.4 nm

Average optical resolution HWHM 4 nm

Optical signal collection Direct optical coupling

Supply 12 Vdc power supply with power supply provided, interchangeable rechargeable battery

Maximum absorbed power 24 W



Type of measurements Reflectance / transmittance *
* may require external accessories

Measurement geometry Diffuse / 0°

Measurement references Internal and automatic

Communication channels** Standard RS422 / RS485
** also available in Ethernet configuration

Source type*** Replaceable halogen lamp
*** internal back-up lamp option available



Commands and signals

Available in two versions with or without a processing unit integrated inside the instrument case.



Software

poliDATA Data acquisition and chemometric prediction software compatible with the SensoLogic and UCal Chemometric suites.

poliPROCESS Process analysis software compatible with the SensoLogic and UCal Chemometric suites, interface available for ISObus and PLC systems (modbus over TCP).

polispec NRe
Industry

Polispec VIS-NIT industry is an extremely robust spectrophotometric sensor, designed to be connected via fibre optics to a variety of measurement probes and lighting sources. Thanks to its particular compactness, **Polispec VIS-NIT industry** can be easily integrated into any point of a production line.

02 Polispec industry

02.04

VIS-NIT
industry



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

Weight 750 g

Material Anodised aluminium



Sensor CMOS, 256 pixel

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

Average numerical resolution < 2 nm

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

Optical signal collection Collimated SMA input

Supply 12 Vdc power supply with supplied power supply

Maximum absorbed power 10 W



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

Acquisition of references Automatic internal references

USB communication channel RS422 / RS485 / RS232
(to be defined when ordering)



Software

poliPROCESS for in-line measurements for interfacing with PLC automation. Available for continuous acquisitions for filtering and for real-time chemometric predictions.

poliDATA fully automated software for stand-alone and laboratory acquisitions and chemometric predictions.

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

ITPhotonics software is compatible with the SensoLogic and UCal Chemometric calibration suites.

polispecVIS-NIT
industry

SOFTWARE

poliPROCESS

It is the main software for the use of tools on processes (industrial systems or machines) in which continuous analysis of the product is required. It is modular software that can be configured or expanded (with the custom development of new modules) to suit specific needs.

The main reference modules are:

GPS module

which is used to acquire NMEA data from GPS antennas with serial connection and to use the received position to geo-reference the analyses

Datalogger module

used to save the analyses in a file in CSV or KML (Keyhole Markup Language) formats

ISObus module

used to manage the analyses through an application on the Virtual Terminal; the acquired data are saved by the task controller of the device, they can be exported in ISOXML format to be used by the main analysis and mapping platforms. From the VT (Virtual Terminal) interface it is possible to completely control the process: selection of the product under analysis (chemometric model to be used), displaying of the instant and average analysis (of the process), receipt of notifications and alarms on any problems

PLC module

used to control the measurement process via PLC using two different protocols: "Modbus over CP" and "ISO over TCP" (Siemens S7). The measurement process reports the analysis values and the system status on registers that can be configured during the installation phase



SP3 MANAGER



It is a software that is used to import spectra saved in SP3 (or CSV) format and to process them. In its free version, it is used to query SP3 files and to convert them into CSV format to be used with common spreadsheets.

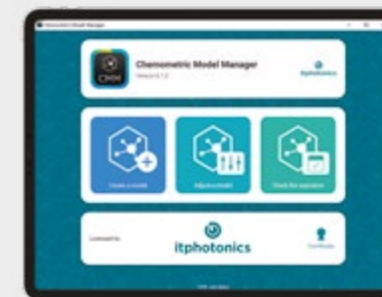
In the licensed version additional features are available:

- the renaming of samples
- the creation of an average of the samples with the same name
- exporting in different formats (CSV, CSV for Matlab or Octave, DAT, CPF)

The analysis functionality is also available for this software (it requires a specific licence): the selected spectra can be predicted using a chemometric model; the analyses can be exported in CSV format or copied directly into a spreadsheet and it is possible to choose whether or not to display the statistical parameters relating to the analyses of each constituent. Finally, the **dataset functionality is also available** (it requires a specific licence): by adding to a file containing spectra, SP3 or CSV, the relative analyses (copy from the spreadsheet or imported directly from the CSV file itself), it is possible to create a dataset file and export it in DAT or CPF * (* Sensologic) format.

C M M

(Chemometric Model Manager)



This software allows the preparation of chemometric models that can be used by the software described above (poliDATA and poliPROCESS).

Its operation depends on a certificate that determines the user and the accessory functions (expiry date, global standardisation...).

An exclusive of this software is the possibility of using a method for **"global standardisation"**, that is in particular an algorithm, developed by us ITPhotonics, to replicate use of the same calibration model on multiple instruments without the need to adapt the calibration curve itself or the instrument.

Polispec

03

OTHER
PRODUCTS,
ACCESSORIES
AND
EXTENSION
KIT

HARDWARE AND SOFTWARE SYSTEMS FOR
INTERFACING POLISPEC INSTRUMENTS ON
OPERATING MACHINES

03

OTHER
PRODUCTS,
ACCESSORIES
AND
EXTENSION
KIT

03.01

 UBeQuo



Transferring data from the ISObus Task Controller to the cloud is no longer a problem thanks to **UBeQuo**. It is sufficient to connect this small device to the USB port of the machine terminal and associate it to a WiFi connection, or to the hotspot network of your mobile phone, **to get the immediately available on the cloud and visible, directly from the office**, regardless of where the machine is located.

03.03

 POWER BOX



POWER BOX is a power supply unit that guarantees the correct functioning of Polispec instruments when they are installed on self-propelled machines or tractors. **POWER BOX therefore manages the correct flow of current during system operation**, as well as allowing the sensor to be switched on and off via the key signal or engine on/off.

03.02

 ISO BOX



ISO BOX is the intelligent control unit which, in addition to managing the correct power supply of Polispec sensors when installed on self-propelled machines or tractors, **processes the signals received from the sensor and integrates the operation of the latter in the ISObus network of the machine**. The same control unit can be used for the integration of systems in proprietary CANbus networks.

03.04

 AGS



AGS (Active Grain Sampler) is the accessory designed for the installation of Polispec systems on combine harvesters or on elevator channels. **Its operation guarantees a continuous and representative flow of product for the relative measurement**, which is self-regulating according to the instantaneous flow rate of material in the main duct.

MULTIPURPOSE "ADD-ON" ACCESSORIES

 . DESIGN

 QUALITY

 . INNOVATION



03.05

**"ADD-ON" KIT
FOR LIQUID
READING**

This accessory, compatible with the **Polispec LITE**, **Polispec NIR** and **Polispec NIRe** instruments in portable configuration, consists of a magnetic cuvette holder that hooks in front of the instrument reading window and allows the reading of liquids, both in reflectance and in transfectance, as it is equipped with a reflector that can be removed from the cuvette and can be positioned with a variable optical path.



03.06

**PROTECTIVE
SLIDE KIT**

This magnetic coupling accessory has a wider base 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 its use. The accessory is designed to allow quick cleaning of the system when used on muddy matrices.



03.07

**"ADD-ON"
FILLING
ELEMENT**

This filling element is easily attached to the bottom of the instrument thanks to magnets and allows the use in a portable way even of the instruments on which an elongated probe is installed. The accessory is compatible with **Polispec LITE**, **Polispec NIR** and **Polispec NIRe** instruments.

**PORTABLE
KIT**

03.11

the tools described below can also be purchased separately

03.08



Power supply AC 220 V + case + WiFi antenna + USB cable + SW poliDATA

+

03.09



7" industrial tablet

+

03.10



Kit of 2 batteries and charging station

**PROCESS
KIT**

03.12



Power supply AC 220 V + case + WiFi antenna + USB cable + SW poliPROCESS

**WIRING
KIT**

03.13

For installation on process/machine



**TABLET DOCKING
STATION VEHICLE
KIT**

03.14

Tablet + docking station vehicle + high density cable



**VESA TABLET
DOCKING STATION
KIT**

03.15

Tablet + VESA docking station



Polispec

04

INSTALLATION
KIT

04

INSTALLATION KIT

for:

Polispec Lite
Polispec NIR
Polispec NIRE

For all the instruments of the Polispec line, various assembly kits are available to **guarantee the correct installation of the systems depending on where they are placed, on operating machines or on industrial production lines.**

Their function is to ensure correct and safe installation, allowing, depending on the needs, also the easy removal of the sensor for cleaning, for diagnostics or for use as a portable system.



This kit consists of an arm **mounting system for the installation of Polispec instruments on the process or on operating machines** (for example the loader shredder) and where horizontal installations are required with need the rapid removal of the instrument for inspection or for the use of the same as a portable system.

INSTALLATION
KIT

04.01

KIT

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





INSTALLATION
KIT

04.02

KIT

Assembly system complete with adapter flange to be welded, available in different thicknesses (standard 6 mm). The installation of the instrument takes place thanks to a special wear tray supplied in the kit. Recommended for vertical installations, on surfaces not flat and on operating machines (such as mixer wagon), where the possible removal of the tool is required to use it also as a portable system.



Installation kit on a pressure duct, available in two sizes: 6" (standard) or 8". The kit is supplied complete with sealing gaskets and accessories necessary for the installation and protection of Polyspec systems. The kit is suitable for operating pressures up to 3 BAR, but with pressure peaks up to 7.5 BAR.

INSTALLATION
KIT

04.03

KIT

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



OTHER
INSTALLATIONS

**CIRCULAR
HOLE**



04.01A

Horizontal installation with round hole and **bracket hooking** (installation type 4.01)



04.04A

Vertical installation with round hole and with **self-supporting cap support**



04.05A

Horizontal installation with round hole and with **self-supporting system of the covering cap**

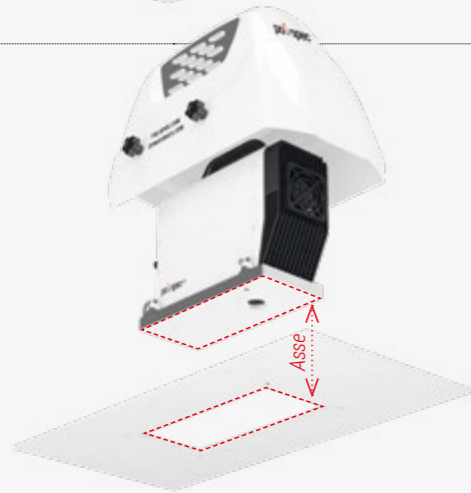


OPTIONAL



Protective covering cap with **optional forced ventilation**, designed for environments where it is necessary to ensure forced air recirculation for better dissipation of the heat produced by the instrument ° T> 40-45 ° C

**RECTANGULAR
HOLE**



04.01B

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



04.04B

Vertical installation with rectangular hole and with **self-supporting system of the covering cap**



04.05B

Horizontal installation with rectangular hole and with **self-supporting system of the covering cap**



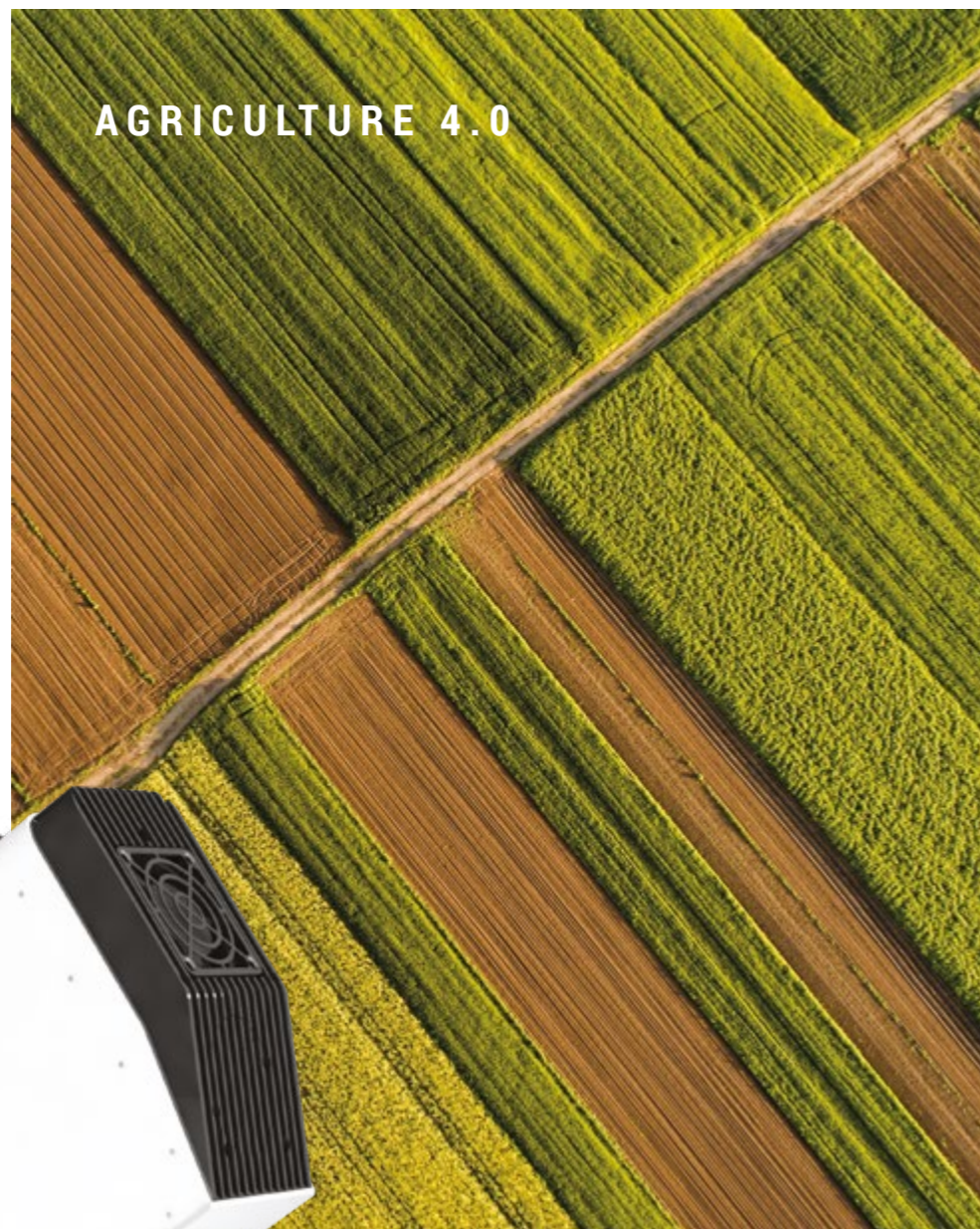
Polispec

05

SOLUTIONS FOR
AGRICULTURE

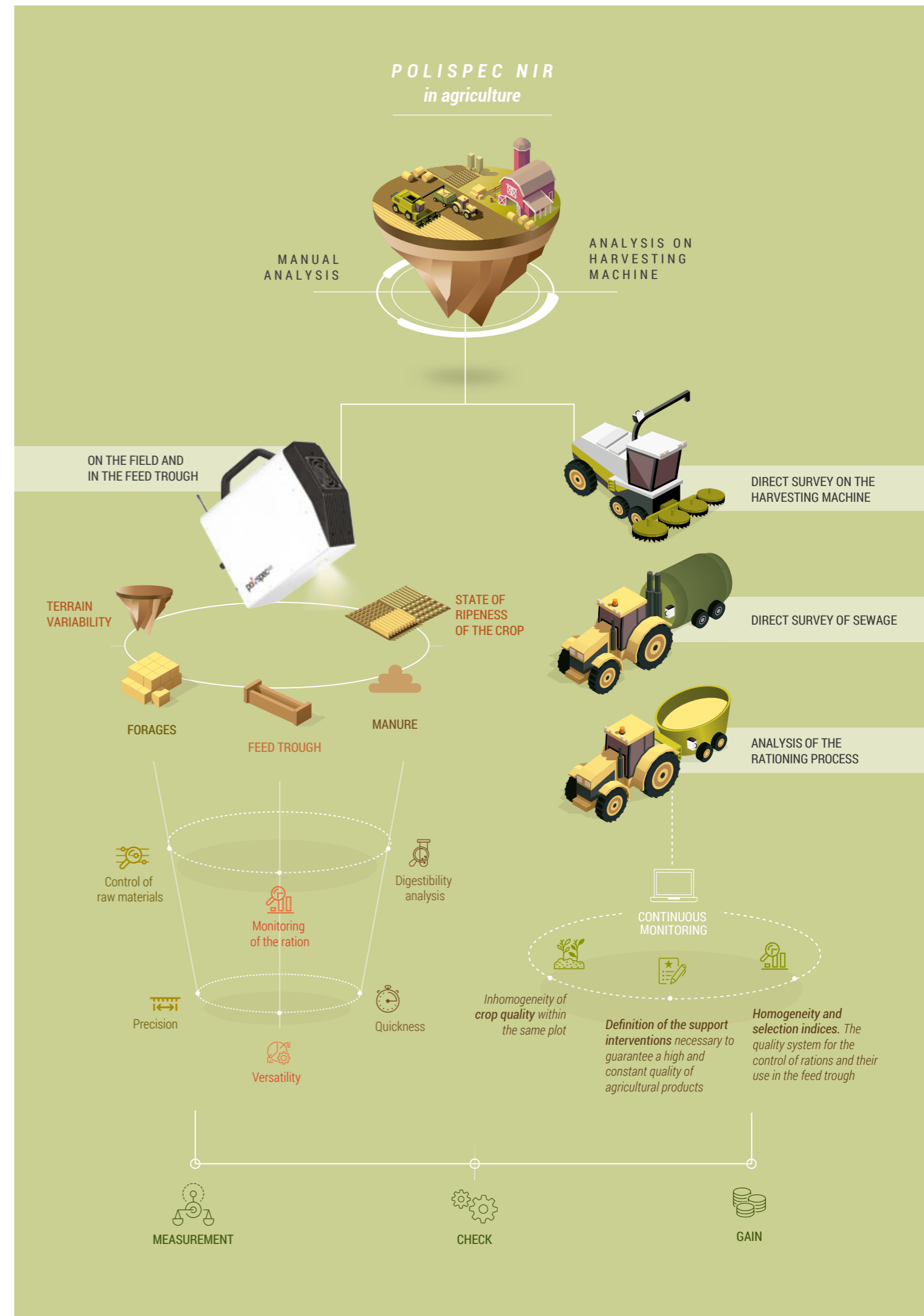
05

Solutions for agriculture



AGRICULTURE 4.0

We have long been engaged in the development of “ready to use” solutions for the agricultural and agro-industrial sectors. With applications born on the basis of the technologies of our production, we are able to offer systems for both portable use and for installation on machines and systems, complete with accessories, software and a wide choice of calibration models. The instruments of the **Polispec line** are designed to guarantee intensive use in all agricultural processes in which immediate and precise measures are required for the management of variables and for self-control programs.



05
Solutions for
agriculture

05.01

NIR
portable



Ergonomic handle, control buttons, WiFi communication, rechargeable battery, rugged 10" touchscreen tablet PC inside which the poliDATA software and ready-to-use calibration curves are installed (the curves are subject to an annual license for their use). Thanks to all this, **Polispec NIR** is the best portable instrument designed for applications in the field, in farm and where rapid measurements and precise answers are required.

System for portable use

The instrument, powered by battery and controlled by two convenient buttons placed next to the handle, is wirelessly connected to a practical industrial tablet PC on which the poliDATA software and the calibration curves are installed.



polispecNIR



PORTABLE
EXTENSION KIT

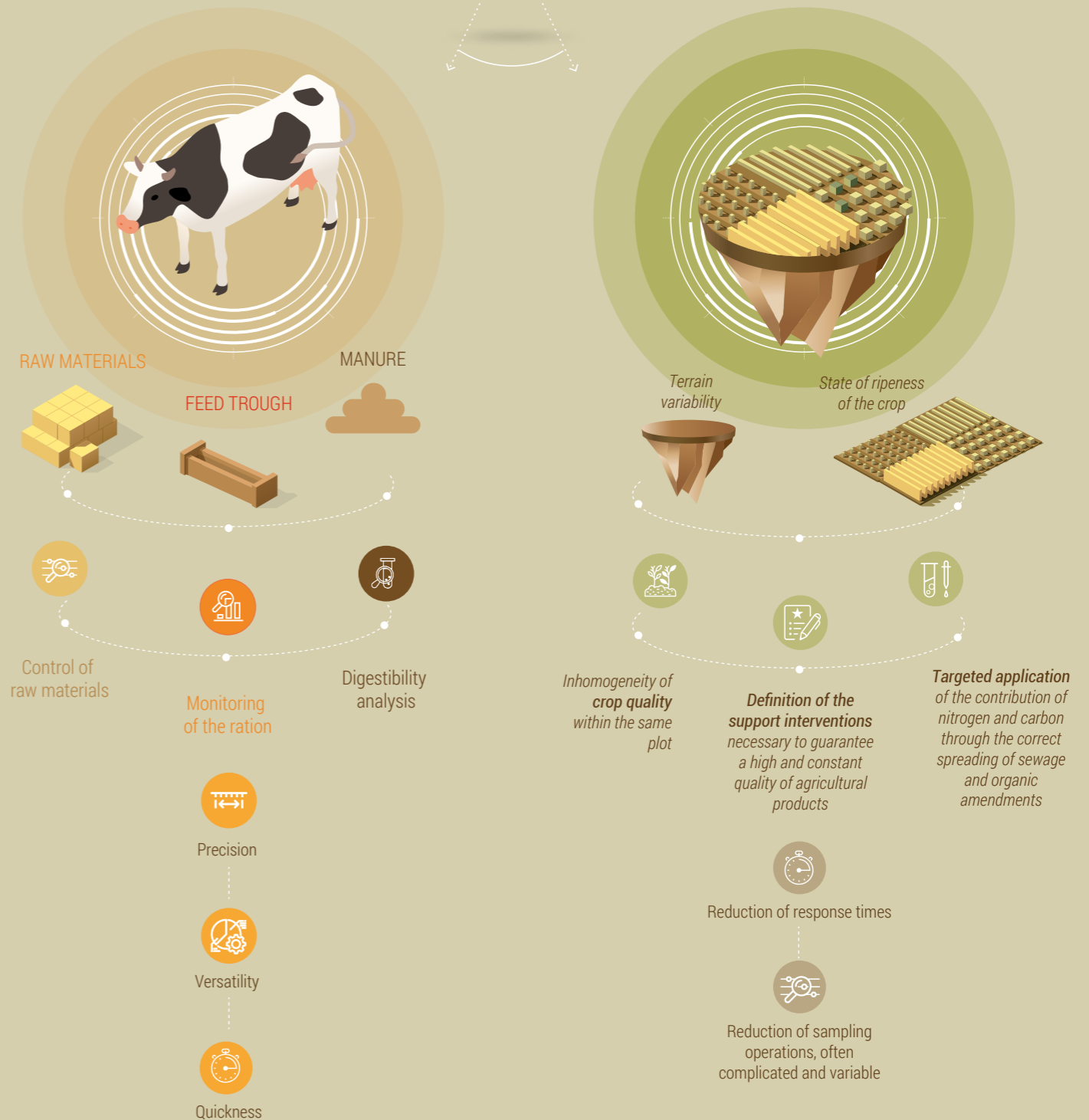


SELECTION OF CALIBRATION CURVES
Access to the dedicated page

POLISPEC NIR
in agriculture

IN THE FEED TROUGH:
measurement of food variables
directly on the farm

ON THE FIELD :
measurement of the crop
variables directly on site



Polispec NIR for precision feeding in a unique configuration dedicated to the integration on the mixer wagon. The sensor is installed on the mixing tub where it is able to provide accurate measurements regarding the nutritional composition of the TMR and the homogeneity of cutting and mixing of the nutrients and physical particles that compose it.

INTEGRATED INSTALLATION ON THE CANBUS/ISOBUS NETWORK OF THE MACHINE

System integration takes place via the CANbus network, thus allowing the sensor to be simultaneously connected to the vehicle and the weighing system and to be controlled by the machine itself*.

* solution dedicated to agricultural machinery manufacturers

OPERATION

The system, installed on the mixing wagon tub, measures the product contained in it and its mixing status in real time, so as to carry out a nutritional control of the ration with the relative recipe. Thanks to the measurement of both the nutritional properties (proteins, fibers and starch) and the physical ones (length of the particles and their distribution), the system is able to alert the operator to the achievement of the correct mixing state and to record the measured data in association with the

actual weight of the ration (if linked to the weighing system) and the dry matter content available per head.

POLISPEC + ASSEMBLY KIT INSTALLED ON THE TUB

The Polispec system communicates with ISO BOX (cabin display) for sending and processing data.

By the three programs **poliTMR**, **TMR Manager**, **TMR Sync** all the information are processed and is possible to carry out targeted and customized analyzes of the feeding process.

05
Solutions For
agriculture

05.02

Integrated
NIR on
self-propelled
mixer wagon



INTEGRATED INSTALLATION ON THE CANBUS/ISOBUS NETWORK OF THE MACHINE



ISO BOX



polispec^{NIR}



KIT 04.02

OPERATION

Polispec



ISO BOX

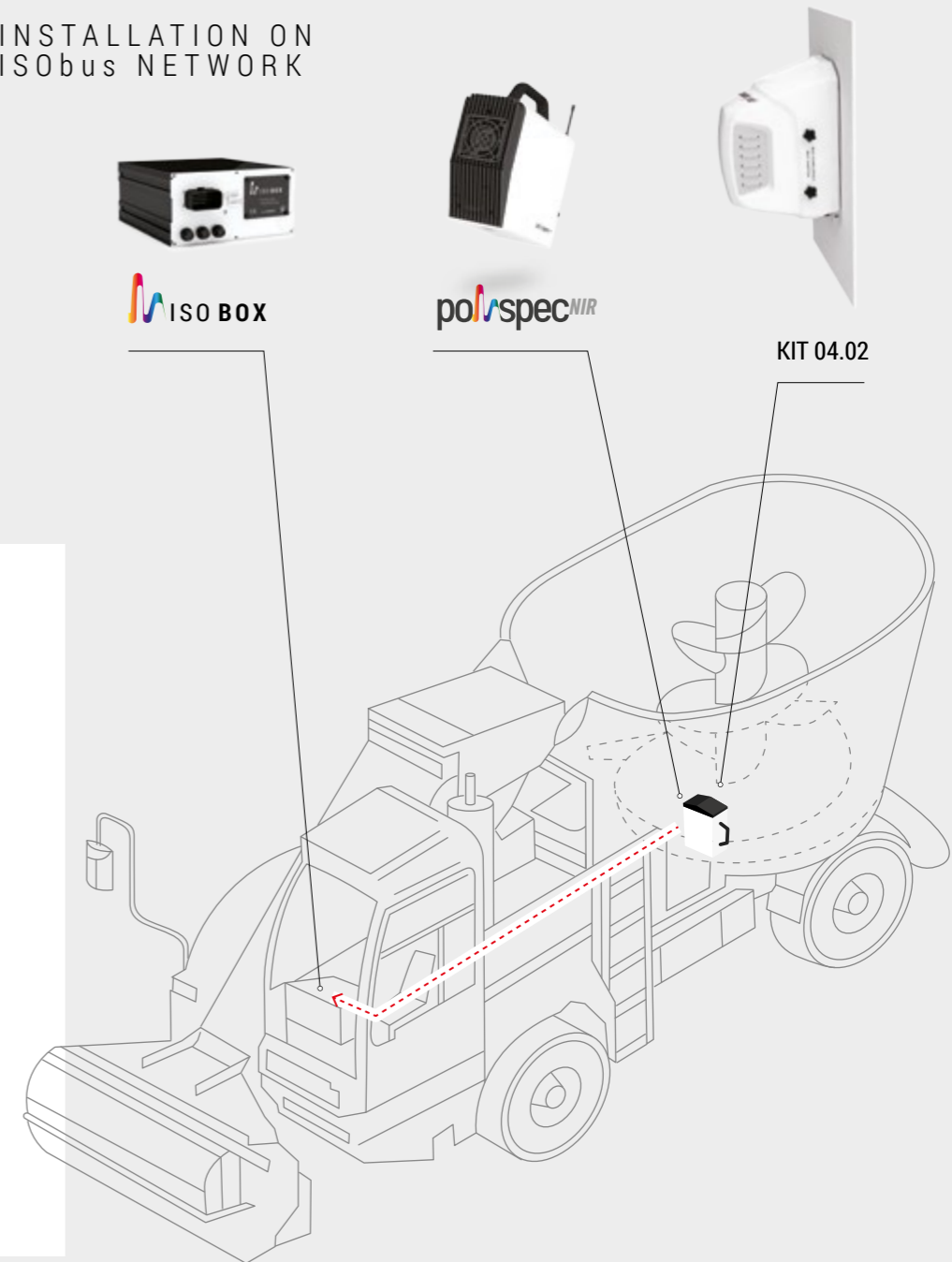


Cabin display
(for sending and data processing)

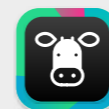


Data processing:

poliTMR
TMR Manager
TMR Sync

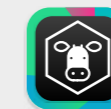


SOFTWARE



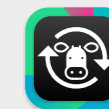
poliTMR

software that is installed on the ISO BOX or on a tablet and which allows the system to function



TMR Manager

software that is installed on a company PC and that allows you to view and monitor data as well as create graphical reports



TMR Sync

software that, burping a wireless connection or hotspot, it allows to synchronize the data measured by the system with the cloud

"ADD-ON" INSTALLATION

Available for installation on self-propelled, trailed and stationary wagons, with the possibility of connection via the CANbus network to the weighing system*.

**connection not necessary for system operation; check for the compatibility with the models*

The monitor is installed in the cabin thanks to a docking station vehicle specially designed to allow you to detach the screen and use the system also as a portable instrument.

05
Solutions For
agriculture

05.03A

NIR for self- propelled mixer wagon

OPERATION

The system, installed on the mixing wagon tub, measures the product contained in it and its mixing status in real time, so as to carry out a nutritional control of the ration itself with the relative recipe. Thanks to the measurement of both the nutritional properties (proteins, fibers and starch) and the physical ones (length of the particles and their distribution), the system is able to alert the operator to the achievement of the correct mixing state and to record the measured data in association with the actual weight of the

ration (if linked to the weighing system) and the dry matter content available per head.

POLISPEC + ASSEMBLY KIT INSTALLED ON THE BATHTUB

The Polisppec system communicates with POWER BOX + tablet and docking station for sending and processing data.

By the three programs **poliTMR, TMR Manager, TMR Sync** all the information are processed and is possible to carry out targeted and customized analyzes of the feeding process.

SOFTWARE



poliTMR

software that is installed on the ISO BOX or on a tablet and which allows the system to function



TMR Manager

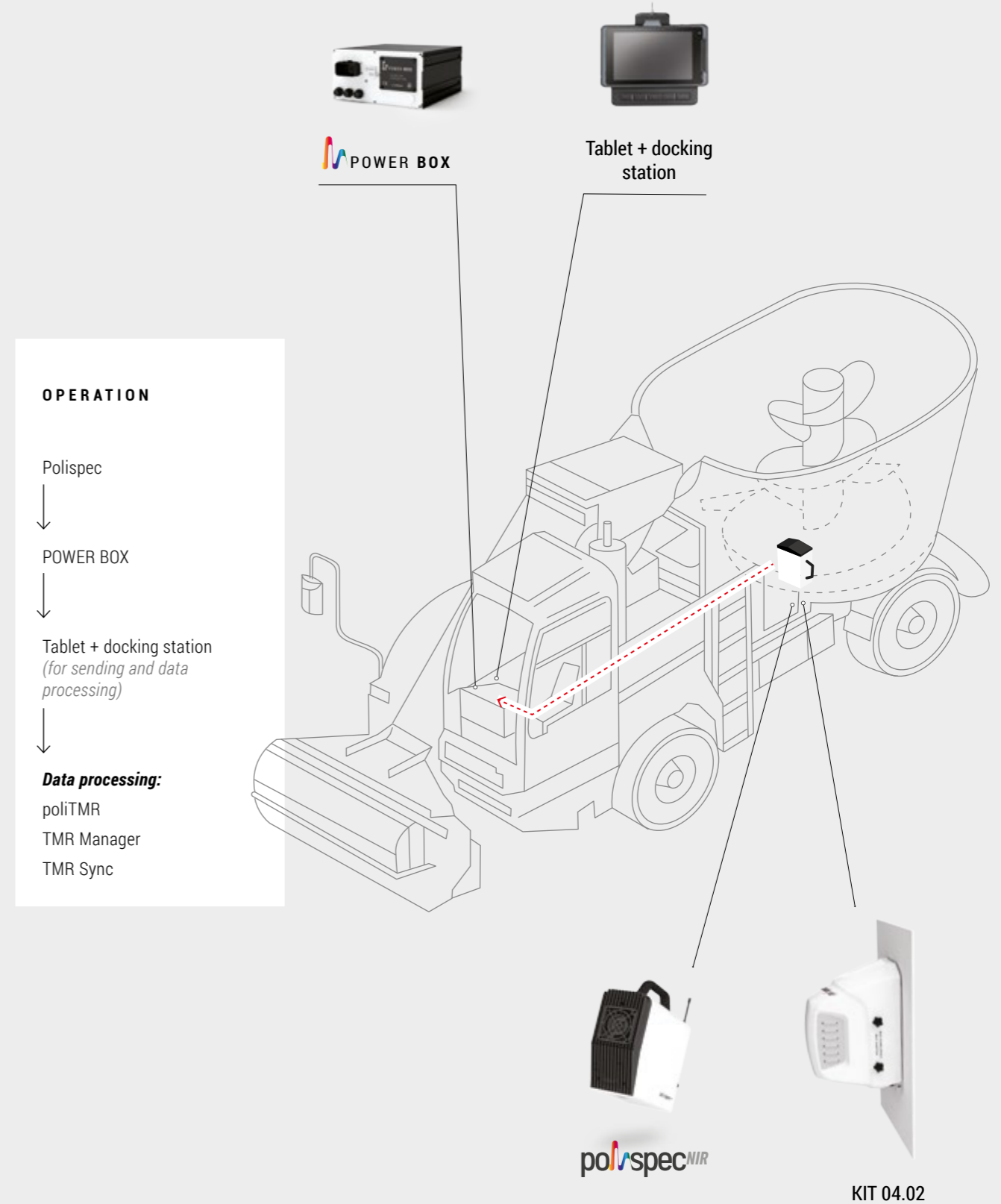
software that is installed on a company PC and that allows you to view and monitor data as well as create graphical reports



TMR Sync

software that, burping a wireless connection or hotspot, it allows to synchronize the data measured by the system with the cloud

"ADD-ON" INSTALLATION ON SELF-PROPELLED WAGON





05
Solutions for
agriculture

05.03B

NIR
for trailed
mixer wagon

Polispec NIR for precision feeding in a single configuration dedicated to installation on a mixer wagon.

The sensor is installed on the mixing tank where it is able to provide accurate measurements regarding the nutritional composition of the ration and the homogeneity of cutting and mixing of the nutrients and physical particles that compose it. Available for installation on self-propelled, trailed and stationary wagons, with the possibility of connection via the CANbus network to the weighbridge*.

** connection not necessary for system operation; check for the compatibility with the models*

The monitor is installed in the cabin thanks to a docking station vehicle specially designed to allow you to detach the screen and therefore use the system as a portable instrument.

OPERATION

The system, installed on the mixing wagon tub, measures the product contained in the bin and its mixing status in real time, so as to carry out a nutritional control of the ration itself with the relative recipe. Thanks to the measurement of both the nutritional properties (proteins, fibers and starch) and the physical ones (length of the particles and their distribution), the system is able to alert the operator to the achievement of the correct mixing state and to record the measured data in

association with the actual weight of the ration (if linked to the weighing) and the dry matter content available per head.

**POLISPEC + ASSEMBLY KIT
INSTALLED ON THE BATHTUB**

The Polispec system communicates with POWER BOX + tablet and docking station for sending and processing data.

By the three programs **poliTMR, TMR Manager, TMR Sync** all the information are processed and is possible to carry out targeted and customized analyzes of the feeding process..

“ADD-ON” INSTALLATION
ON TRAILED MIXER
WAGON



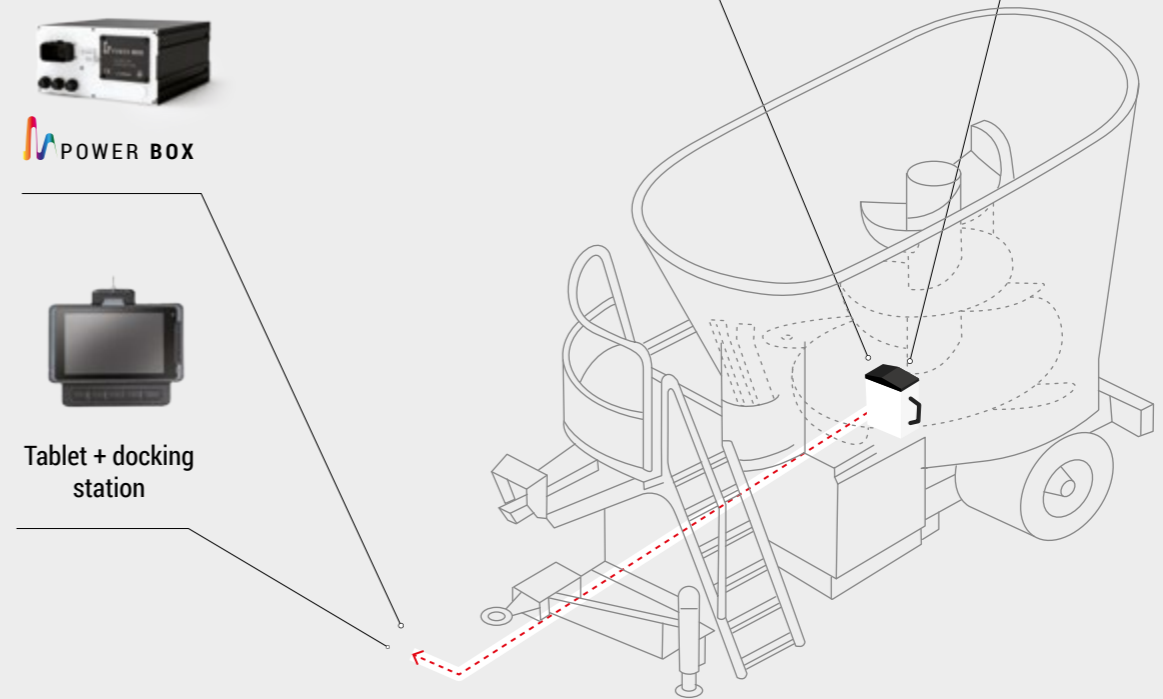
POWER BOX



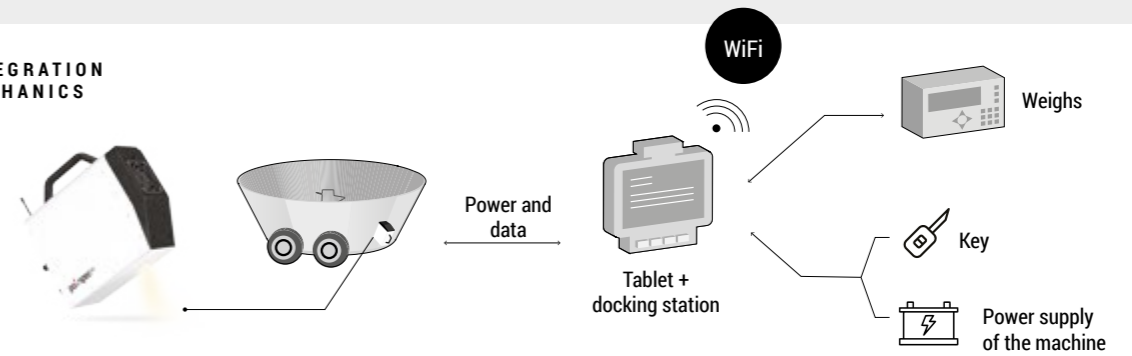
Tablet + docking station

polispec^{NIR}

KIT 04.02



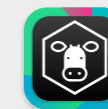
**INTEGRATION
MECHANICS**



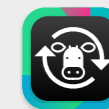
SOFTWARE



poliTMR
software that is installed on the ISO BOX or on a tablet and which allows the system to function



TMR Manager
software that is installed on a company PC and that allows you to view and monitor data as well as create graphical reports



TMR Sync
software that, burping a wireless connection or hotspot, it allows to synchronize the data measured by the system with the cloud

STATIONARY

Available for installation on self-propelled, trailed and stationary wagons, with the possibility of connection via the CANbus network to the weighbridge*.

**connection not necessary for system operation; check for the compatibility with the models*

The monitor is installed in the cabin thanks to a docking station vehicle specifically designed to allow you to detach the screen and therefore use the system as a portable instrument.

OPERATION

The system, installed on the mixing wagon tub, measures the product contained in the bin and its mixing status in real time, so as to carry out a nutritional control of the ration itself with the relative recipe. Thanks to the measurement of both the nutritional properties (proteins, fibers and starch) and the physical ones (length of the particles and their distribution), the system is able to warn the operator that the correct mixing status has been reached and to record the measured data. In association with the actual

weight of the ration (if connected to the weighing system) and the dry matter content available per head.

POLISPEC + ASSEMBLY KIT INSTALLED ON THE BATHTUB

The Polispec system communicates with ISO BOX (cabin display) for sending and processing data.

By the three programs **poliTMR**, **TMR Manager**, **TMR Sync** all the information are processed and is possible to carry out targeted and customized analyzes of the feeding process.

05
Solutions for
agriculture

05.030

NIR
for stationary
mixer wagon

SOFTWARE



poliTMR

software that is installed on the ISO BOX or on a tablet and which allows the system to function



TMR Manager

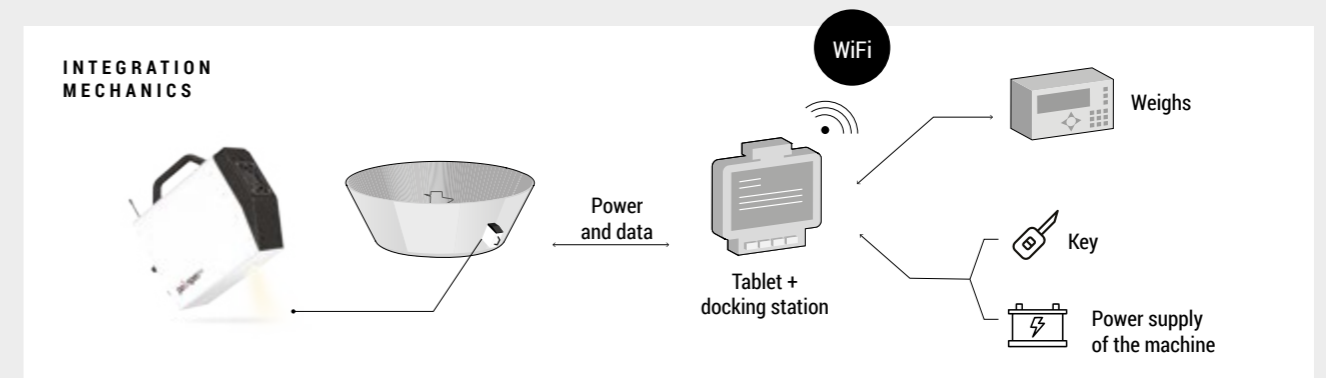
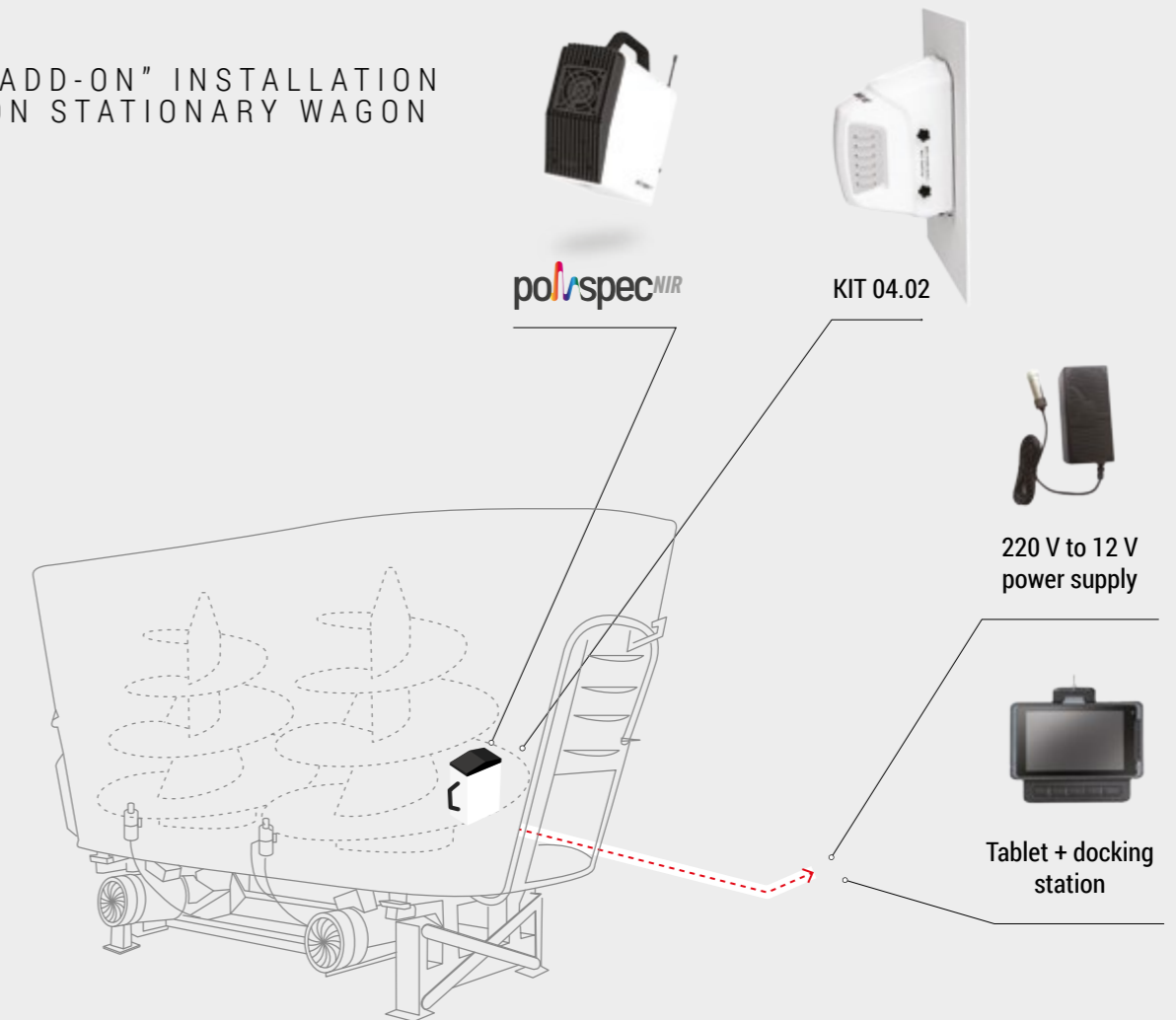
software that is installed on a company PC and that allows you to view and monitor data as well as create graphical reports



TMR Sync

software that, through a wireless connection or hotspot, it allows to synchronize the data measured by the system with the cloud

"ADD-ON" INSTALLATION ON STATIONARY WAGON



Polispec NIR for installation on combine harvester. A smart solution dedicated to those who exploit the potential of precision farming to learn about and optimize cultivation techniques, in order to optimize the quantity and quality of crops. The **Polispec NIR** system is installed on the porter of the machine thanks to **AGS (Active Grain Sampler)**, a device capable of continuously sampling the flow of collected product and self-regulating according to the instantaneous flow rate. Connected via ISObus to the virtual terminal of the machine and to the GPS antenna, the **Polispec NIR** system is able to provide detailed maps on the quality of crops, guaranteeing traceability and providing essential data for the development of a correct agronomic plan.

05
Solutions for
agriculture

05.04

NIR
for combine
harvester

Composed of:



* **Optional:**



* **Necessary preparations:**



OPERATION

The Polispec NIR sensor is installed on the porter of the combine thanks to the special AGS (Active Grain Sampler) accessory. In this way it is possible to measure the qualitative aspects of the

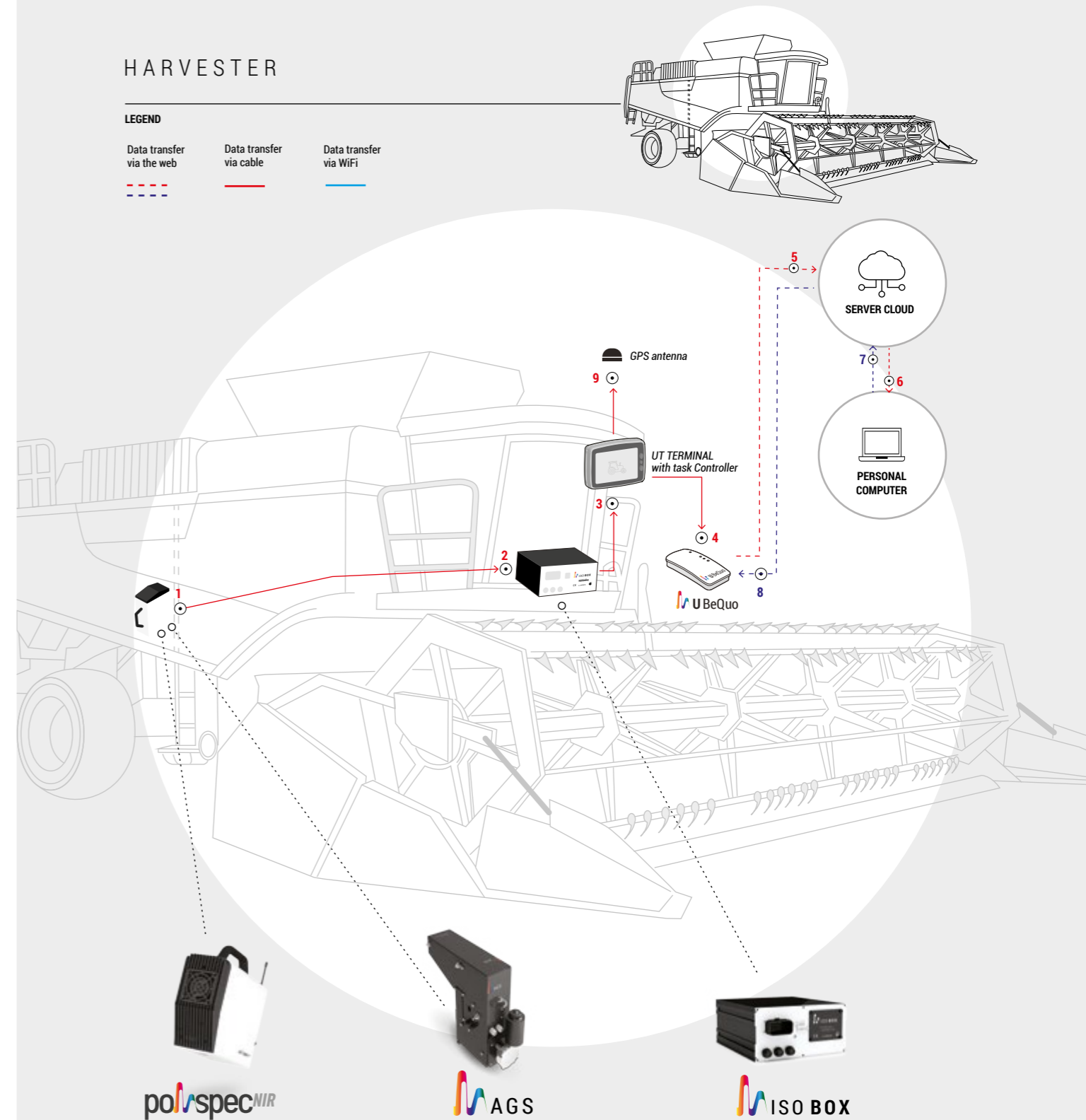
collected product in an aliquot that is always proportional to the flow of material. The data are sent to the ISObus control unit and are processed so to be displayed on the machine console and appropriately recorded by the task controller together with the GPS position.



HARVESTER

LEGEND

- Data transfer via the web
- Data transfer via cable
- Data transfer via WiFi



POLISPEC NIR

NIR sensor for the measurement of dry matter, protein, fat and starch in harvested products

AGS (ACTIVE GRAIN SAMPLER)

it is an accessory necessary for the installation of the Polispec sensor and that allows you to analyze, in a proportional manner to the flow collected, an aliquot that is always representative of the product

ISOBOX

control unit that appropriately powers the Polispec sensor, managing its protected switching on and off; it also manages all the measurements by processing the signal and collecting it and sending the data on the machine's ISObus network

Polispec NIR installed on the forage harvester is an innovative system that guarantees constant control of all the harvested product and which, thanks to the integration on the ISObus network of the machine and the GPS antenna, allows to collect precise data on the quality of the products and map them on the surface of the cultivated areas, so as to guarantee a correct management of agronomic processes. The data collected are therefore very useful for the correct qualitative and economic enhancement of the crops and can be used for the best management of the cultivated areas with respect to their production capacity.

Composed of:



* **Optional:**

U BeQuo



* **Necessary preparations:**



UT TERMINAL with Task Controller



GPS antenna

OPERATION

The Polispec sensor is installed on the spout of the forage harvester, using the special universal mounting kit. In this way it is possible to continuously measure the qualitative aspects of the collected product and send them to the ISObus control unit where they

are processed so that they can be displayed on the machine console and appropriately recorded by the Task Controller together with the GPS position.



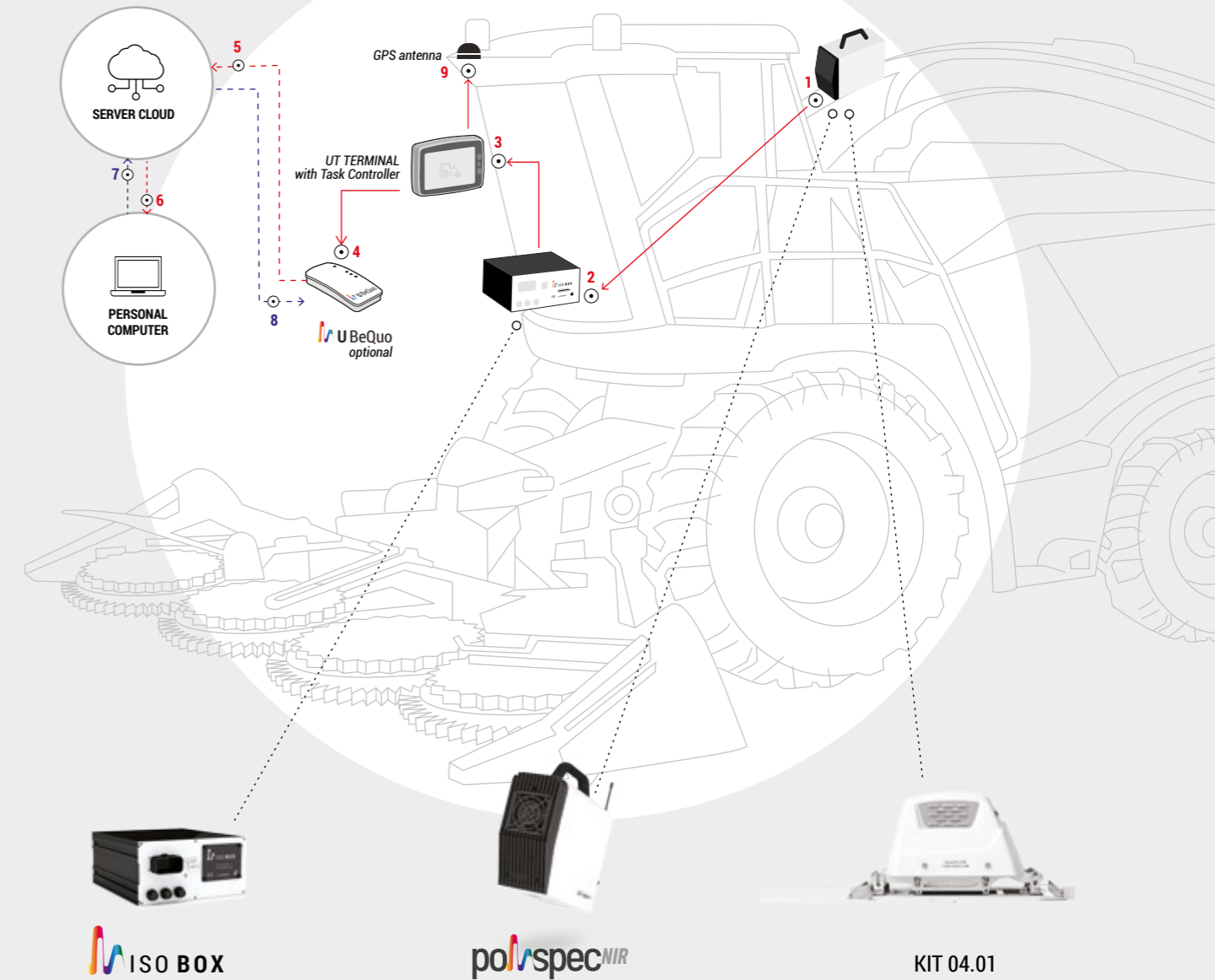
FORAGE HARVESTER

LEGEND

Data transfer via the web

Data transfer via cable

Data transfer via WiFi



ISOBOX

control unit that appropriately powers the Polispec sensor, managing its protected switching on and off; it also manages all the measurements by processing the signal and collecting it and sending the data on the machine's ISObus network

POLISPEC NIR

NIR sensor for the measurement of dry matter, protein, fat and starch in harvested products

KIT 04.01

universal mounting kit for forage harvester that allows the safe installation of the Polispec sensor and its rapid removal for cleaning and inspection

05 Solutions for agriculture

05.05

NIR for forage harvester

Measurement system of nitrogen, phosphate and organic substance content on barrel for spreading sewage. The system consists of a duct for installing the **Polispec NIR** sensor and is available in two versions.

OPERATION

Installed in such a way as to be able to carry out analyzes during the loading phase, the system is able to provide an average data that can be used to correctly set the discharge volumes for fixed rate spreading or as an input to the prescription map for variable rate spreading.

The **Polispec NIR** sensor, installed thanks to the appropriate pressure duct kit (6 "or 8" pipes), measures and sends data to the processing unit located in the cabin and within reach of the operator.

05
Solutions for
agriculture

05.06

NIR
on slurry
spreading
tank

Composed of:



* **Optional:** GPS antenna

"ADD-ON" INSTALLATION

Suitable for integration on both self-propelled and trailed machines. The

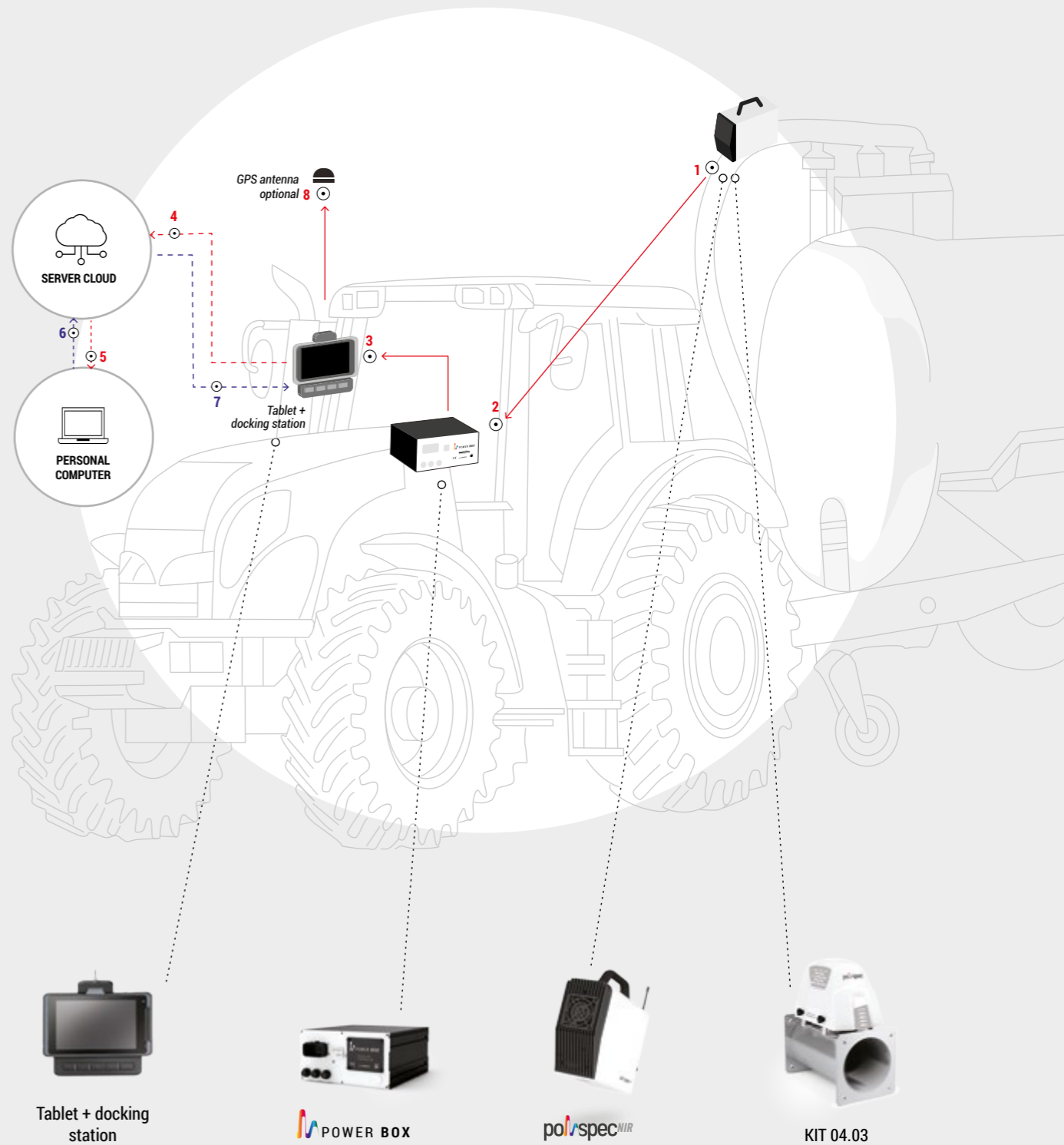
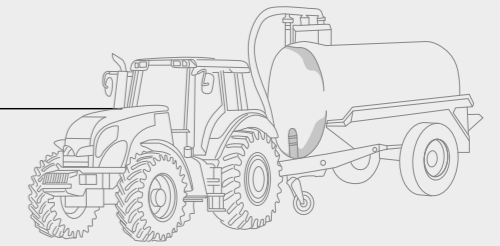
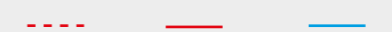
system is managed by a tablet PC per vehicle, installed in the cabin thanks to a suitable support, while a control unit manages the correct power supply of the sensor.



"ADD-ON" INSTALLATION

LEGEND

Data transfer via the web
Data transfer via cable
Data transfer via WiFi



Tablet + docking station

POWER BOX

polispec^{NIR}

KIT 04.03

System for measuring the nitrogen and organic substance content on a tank for spreading sewage. The system consists of a duct for installing the **Polispec NIR** sensor and is available in two versions.

OPERATION

The **Polispec NIR** system for the measurement of nitrogen and organic substance content on slurry of zootechnical and biogas origin. Installed in such a way as to be able to carry out analyzes during the loading phase, the system is able to provide an average data that can be used to correctly set the discharge volumes for fixed rate spreading or as an input to the prescription map for variable rate spreading.

The **Polispec NIR** sensor, installed thanks to the appropriate pressure duct kit (6 "or 8" pipes), measures and sends data to the processing unit located in the cabin and within reach of the operator.

Composed of:



INTEGRATED INSTALLATION ON THE CANbus/ISObus NETWORK of the machine

Especially suitable for integration on self-propelled machines. A CANbus or

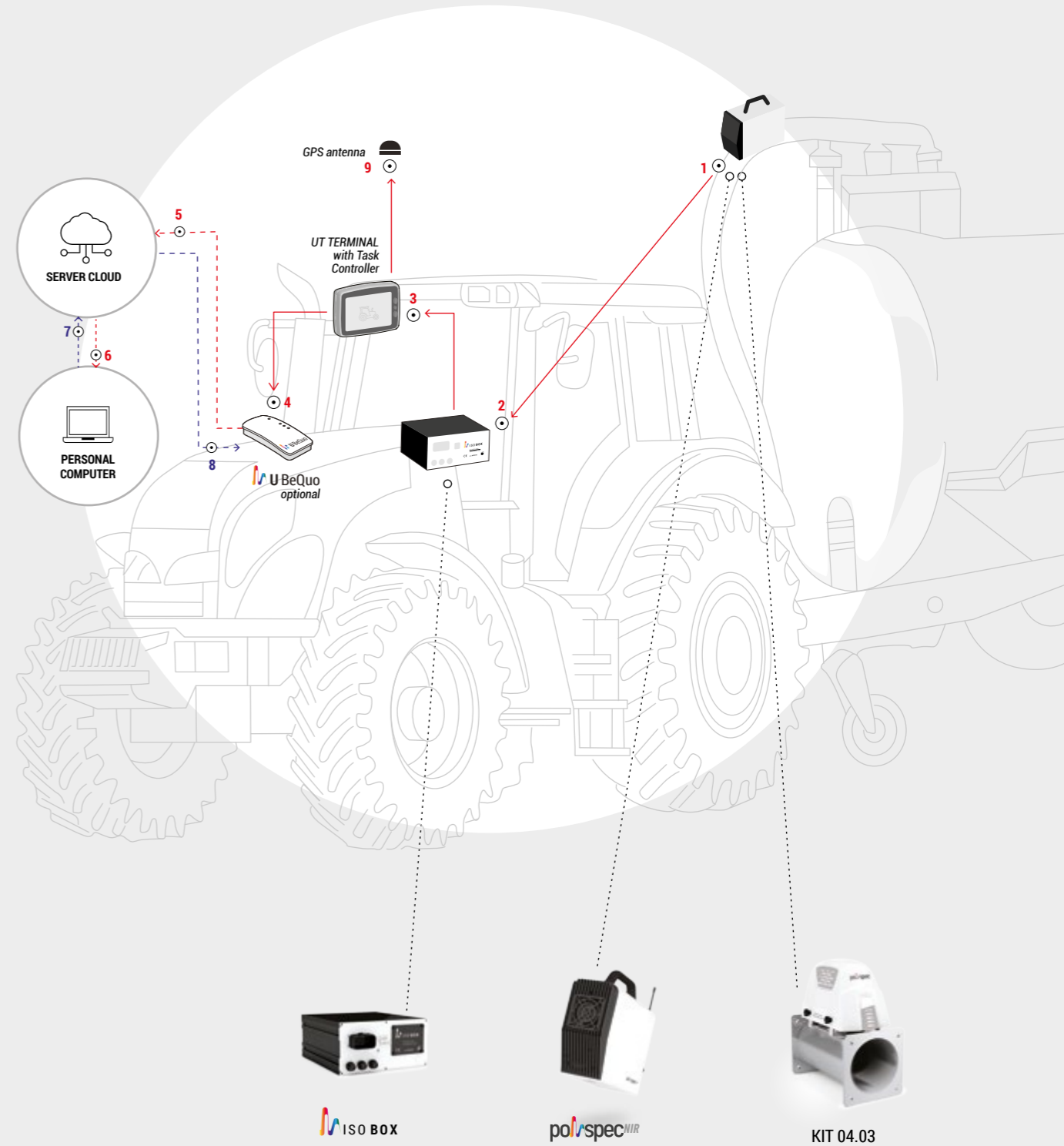
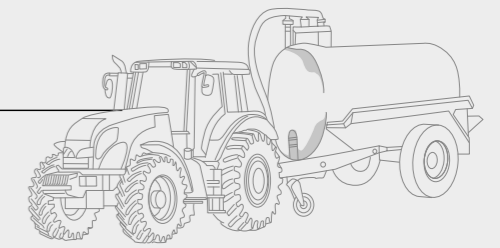
ISObus control unit manages the entire system while the data is displayed on the machine (or tractor) display.

* Solution dedicated to agricultural machinery manufacturers

INTEGRATED INSTALLATION ON THE CANbus/ISObus NETWORK of the machine

LEGEND

Data transfer via the web (dashed red line)
 Data transfer via cable (solid red line)
 Data transfer via WiFi (solid blue line)



05 Solutions for agriculture

05.07

NIR
 slurry
 spreading
 tank

Polispec

06

CALIBRATION
CURVES

06

CALIBRATION CURVES

For **Polispec NIR** instruments purchased in **"AGRI solution"**, a wide range of ready-to-use calibrations is available, suitable for measuring raw materials, the main crops for forage use, rations for livestock, slurry and solid manure.

All calibration curves are licensed for annual use without any obligation of choice or renewal.

Calibration curves for Polispec NIR systems for portable use:



SILAGE AND FORAGE

Corn silage, grass silage, cereal silage, sorghum silage, corn cob mix, high moisture corn, dried hay and forages, alfalfa hay, grass hay



RATIONS FOR RUMINANTS

TMR for lactation, TMR for lactation without silages, TMR for dry cows and heifers, TMR for beef cattle



GREEN HARVESTING CROPS

Fresh corn chopped, cereals crops chopped, fresh chopped grass, fresh chopped sorghum, green alfalfa, fresh high moisture corn, fresh corn cob mix



RAW MATERIALS

Corn flour, cotton extraction flour, soybean extraction flour, DDGS, corn husk, corn germ



GRAINS

Soybean, wheat, corn, cotton seeds



FECES AND SEWAGE

Feces of lactating cows, feces for fattening cattle, slurry (zootechnical and biogas)

Calibration kits for Polispec NIR systems installed on the machine:



KIT FOR MIXER WAGON



KIT FOR COMBINE HARVESTER



KIT FOR FORAGE HARVESTER



KIT FOR SLURRY SPREADER



Enter by the QRcode on our dedicated web page. You can always find updated data

polispec

GETTING INSIGHT

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