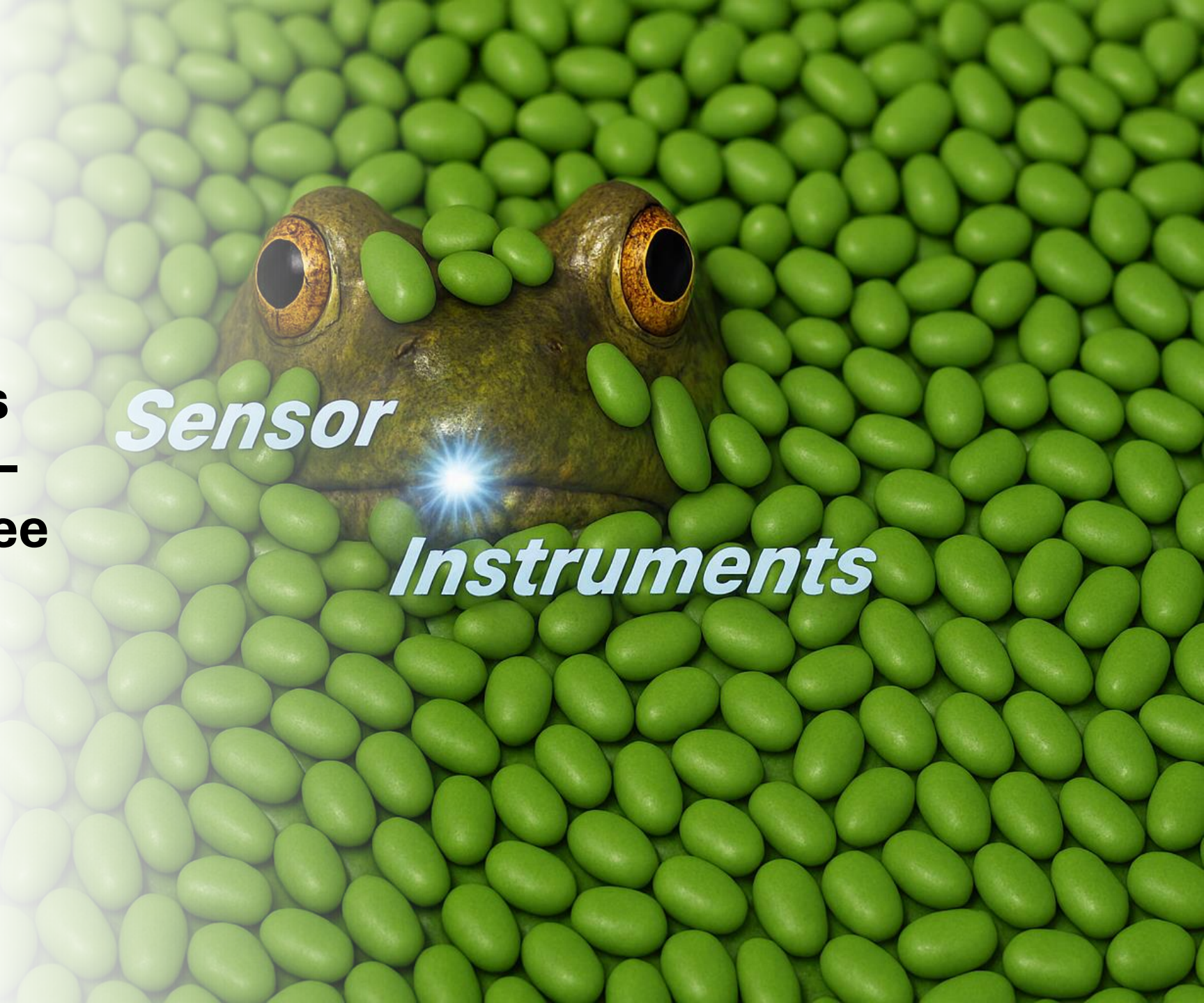
Next-Gen Recyclate Analyzer for Color and Polymer Identification

Sensor Instruments
Let's make sensors more individual

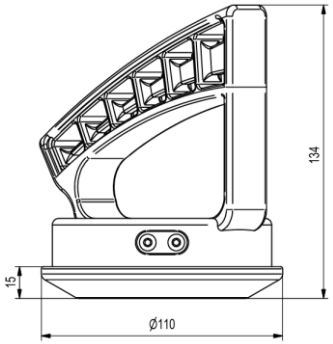
Inspired by nature, we've equipped our color sensor systems with NIR technology – now they don't just see color, they recognize the very identity of plastics



It’s not just about extending vision from visible to NIR – it’s about taking the same sensor from mobile to lab to inline.
With SPECTRO-T-4-MOBILE you can test pellets right after delivery – even in the big bag.
Drop the sensor into the granulate, kick off the measurement on the portable PC, and sweep the head in a figure-eight. You’ll hit dE and dNir values down to 0.3, and thanks to the extra battery in the portable unit, the sensor keeps going for hours.

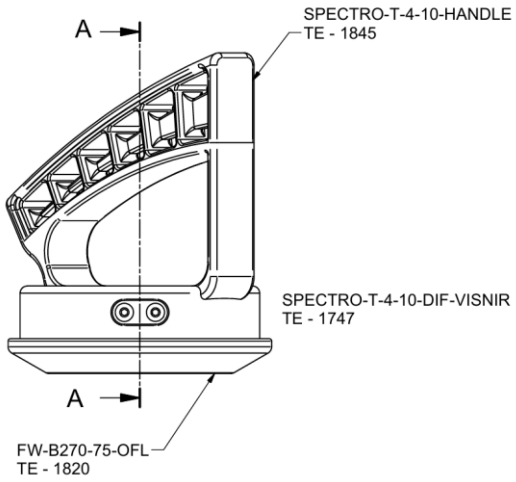
SPECTRO-T-4-MOBILE-VISNIR

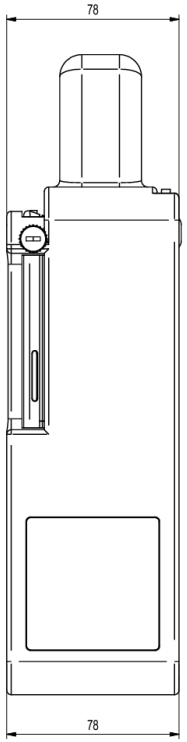
- Off-grid power supply
- Portable touchscreen PC
- RS232/USB-C adapter
- DOCAL - software for monitoring
- OK / NOK indicator (green-red LED)
- Built-in buzzer
- Color control (L*a*b* and dL*da*db*)
- Polymer type control (N*i*r* and dN*di*dr*)
- WLAN
- Bluetooth
- On-board keyboard
- Surface pen

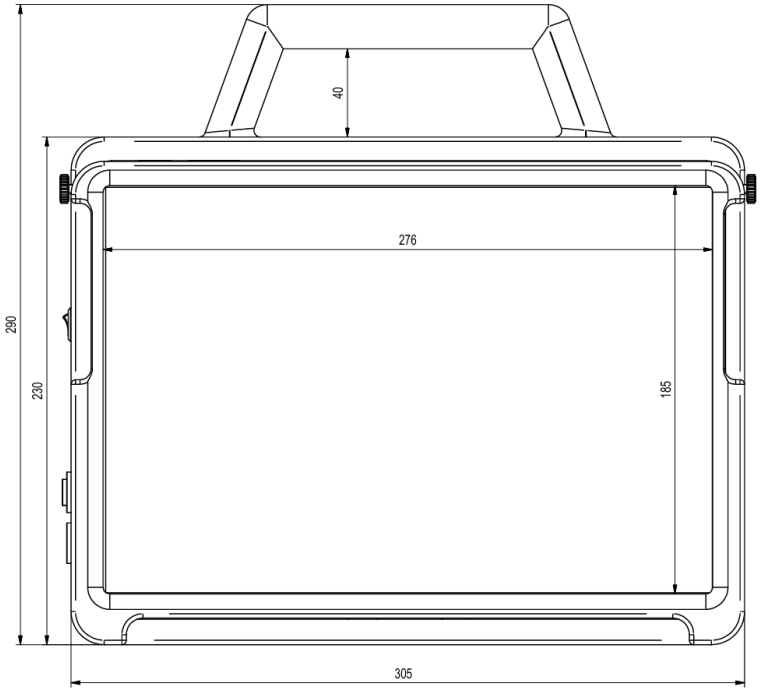


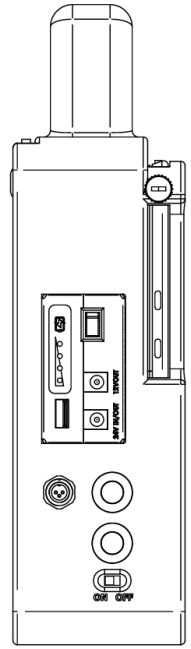
Connection to PLC:
4-pin M8 Binder Series 768/718

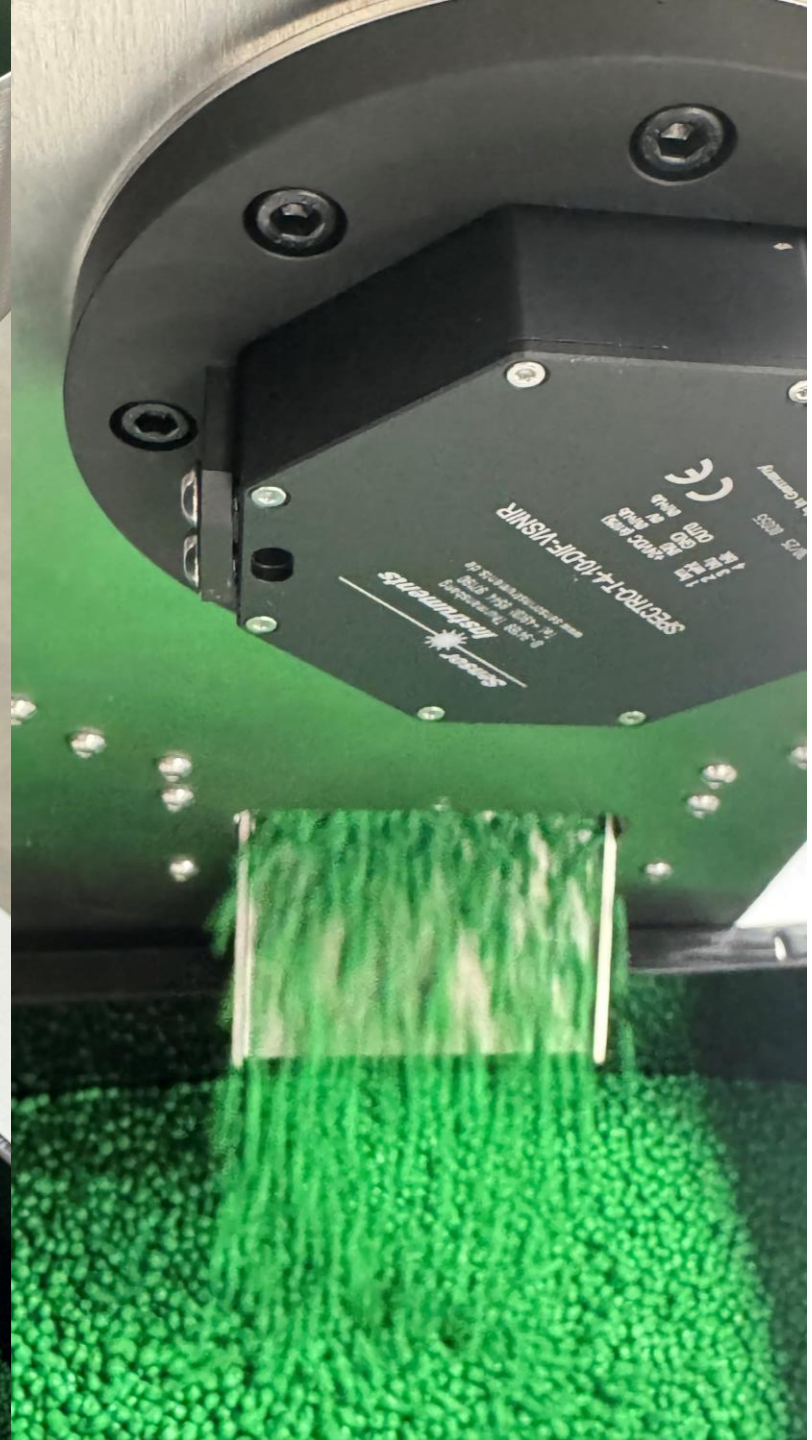
Pin:		
1	brn	+24VDC (±10%)
2	wht	IN0 (Digital 0: 0 … 1V, Digital 1: +Ub - 10%)
3	blu	GND (0V)
4	blk	OUT0 (Digital 0: 0 … 1V, Digital 1: +Ub - 10%)







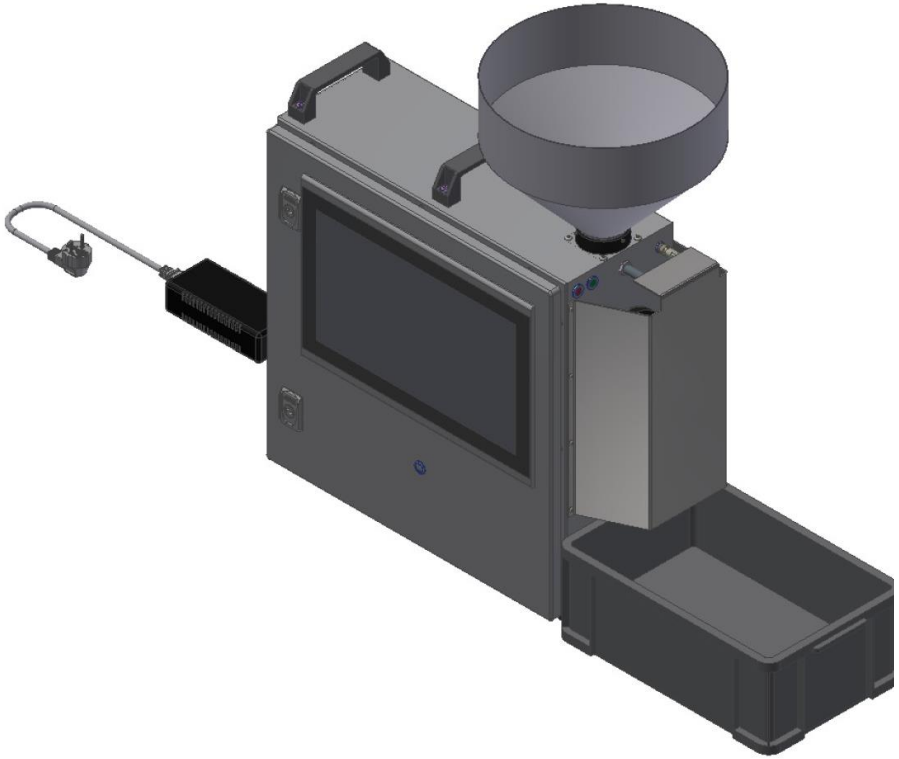


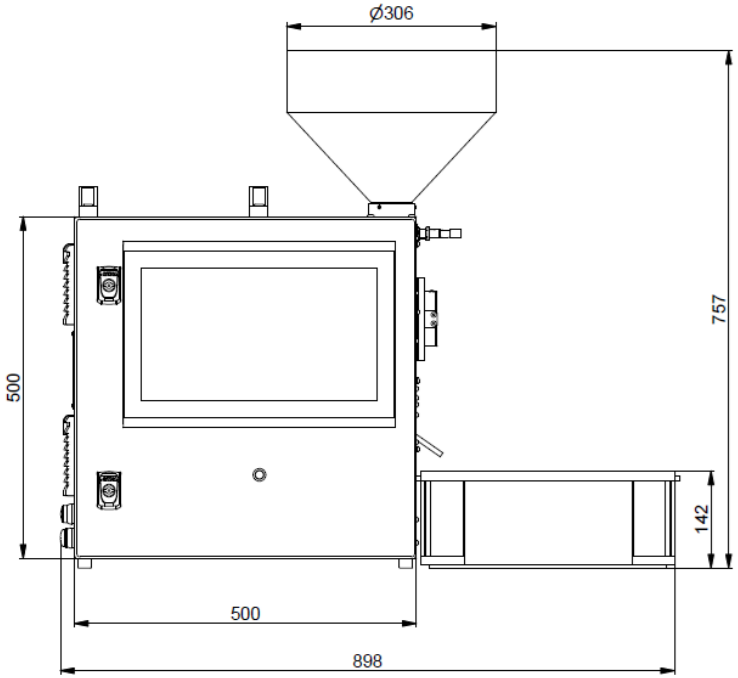


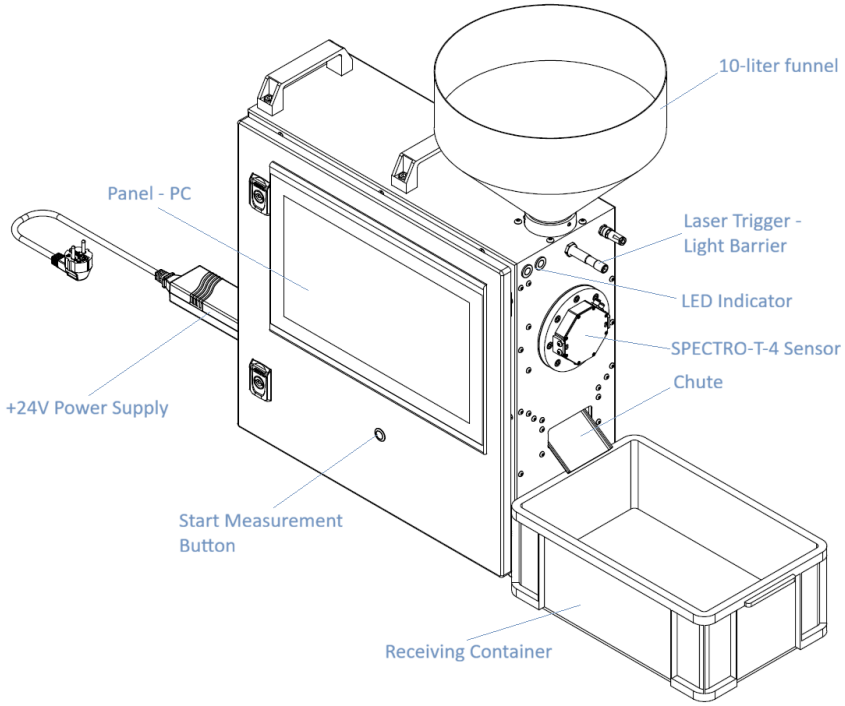
Same sensor in lab, inline, or mobile – results you can truly compare.
Pellets are measured on the fly, always through a sight glass that shields the optics from the stream.
A key advantage of measuring pellets in motion is that the random orientation of each pellet in the light spot is effectively averaged out.
Over just a few seconds, as the granulate flows from the hopper, this results in a stable mean – achieving a dE and dNir value of 0.3.
Just hit the button and let it measure.

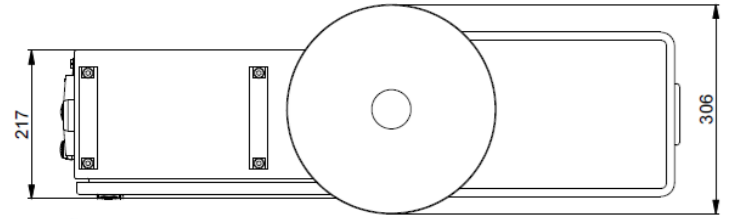
SPECTRO-T-4-LAB-VISNIR

- Panel - PC
- DOCAL - Software
- Color Measurement (L*a*b*)
- NIR Measurement (N*i*r*)
- 10 Liter Funnel
- Automatic Measurement Stop
- Receiving Container Status Check
- Measurement Accuracy Color: dE < 0.3
- Measurement Accuracy NIR: dNir < 0.3
- Measurement Start by Button press
- Stainless Steel Housing
- Ethernet Interface
- USB Interface
- +24V Power Supply





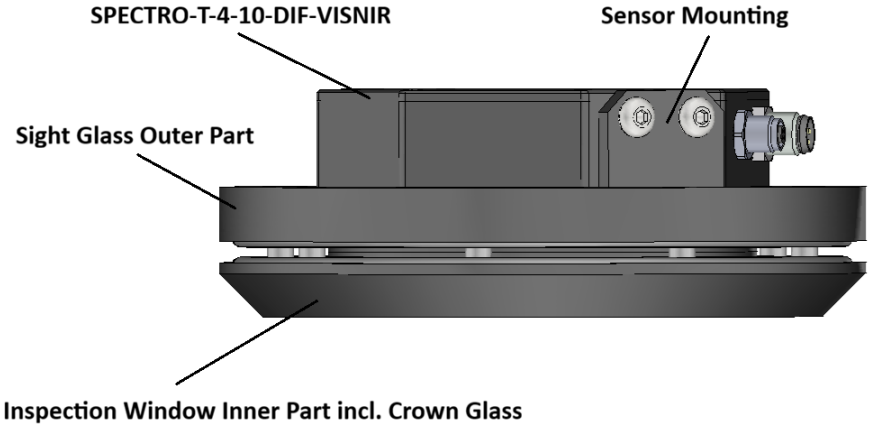




Inline, the SPECTRO-T-4 sensor system can be mounted to a dosing unit via a sight glass.
The measurement data reveals whether the recyclate can be used 1:1 or if virgin material needs to be added to stay within tolerance limits. The sensor data can also be fed directly to the dosing unit to close the control loop.
Pellets just delivered? Whether in the silo, day silo, or bag emptying station, recyclate quality can be checked on the spot – with sensor data sent over Ethernet or fieldbus right to QA.

SPECTRO-T-4-INLINE-VISNIR

- DOCAL - Software
- Color Measurement (L*a*b*), dE < 0.3
- NIR Measurement (N*i*r*), dNir < 0.3
- Sight Glass Assembly Fixture
- + 24V Power Supply
- RS 232 Interface (Ethernet-, ProfiNet-, USB - Adapter available)
- I/O - Type and RS485 Type available
- Black anodized Aluminum Housing
- Crown Glass



Digital - I/O version

Connection to PLC:

4-pin M8 Binder Series 768/718

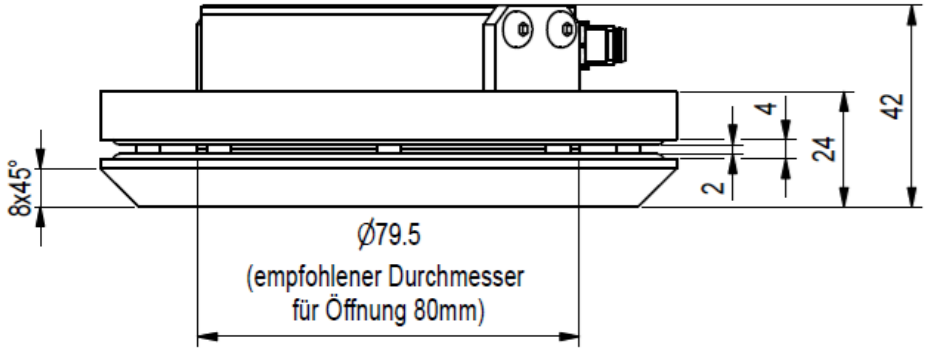
Pin:		
1	brn	+24VDC (±10%)
2	wht	IN0 (Digital 0: 0 … 1V, Digital 1: +Ub - 10%)
3	blu	GND (0V)
4	blk	OUT0 (Digital 0: 0 … 1V, Digital 1: +Ub - 10%)

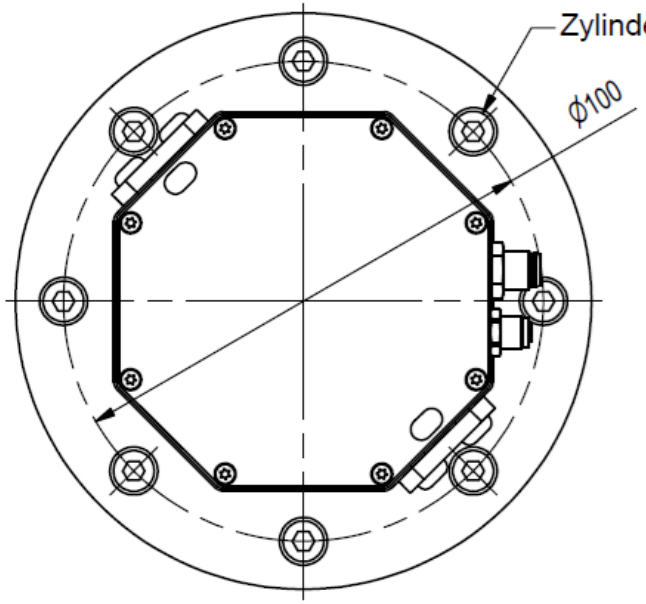
RS485 version

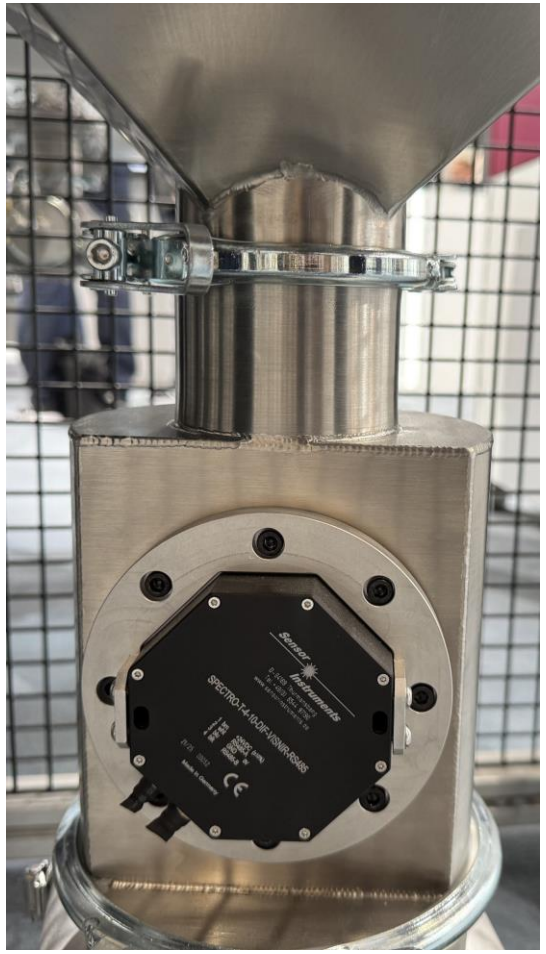
Connection to PLC:

4-pin M8 Binder Series 768/718

Pin:		
1	brn	+24VDC (±10%)
2	wht	RS485-A
3	blu	GND (0V)
4	blk	RS485-B

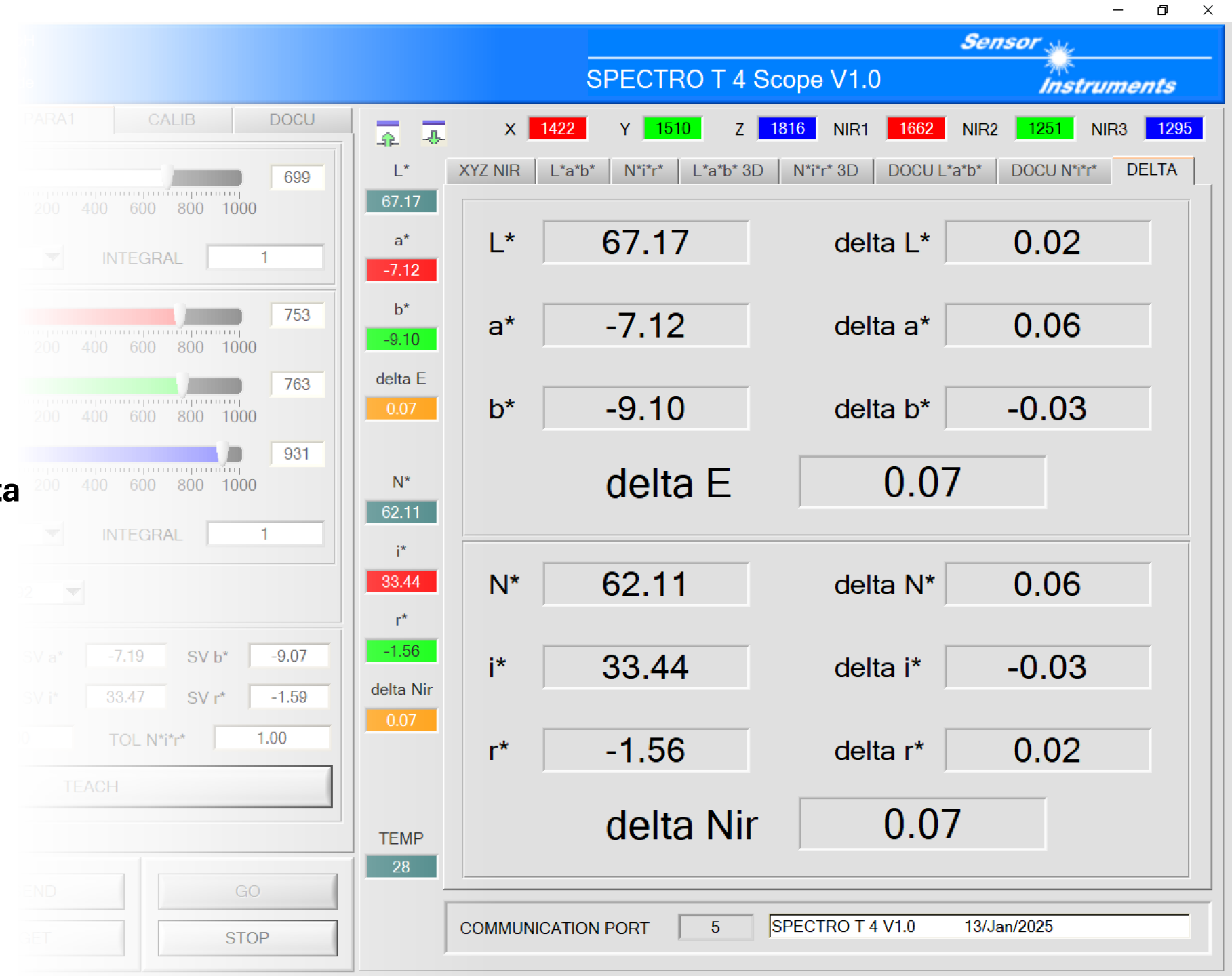




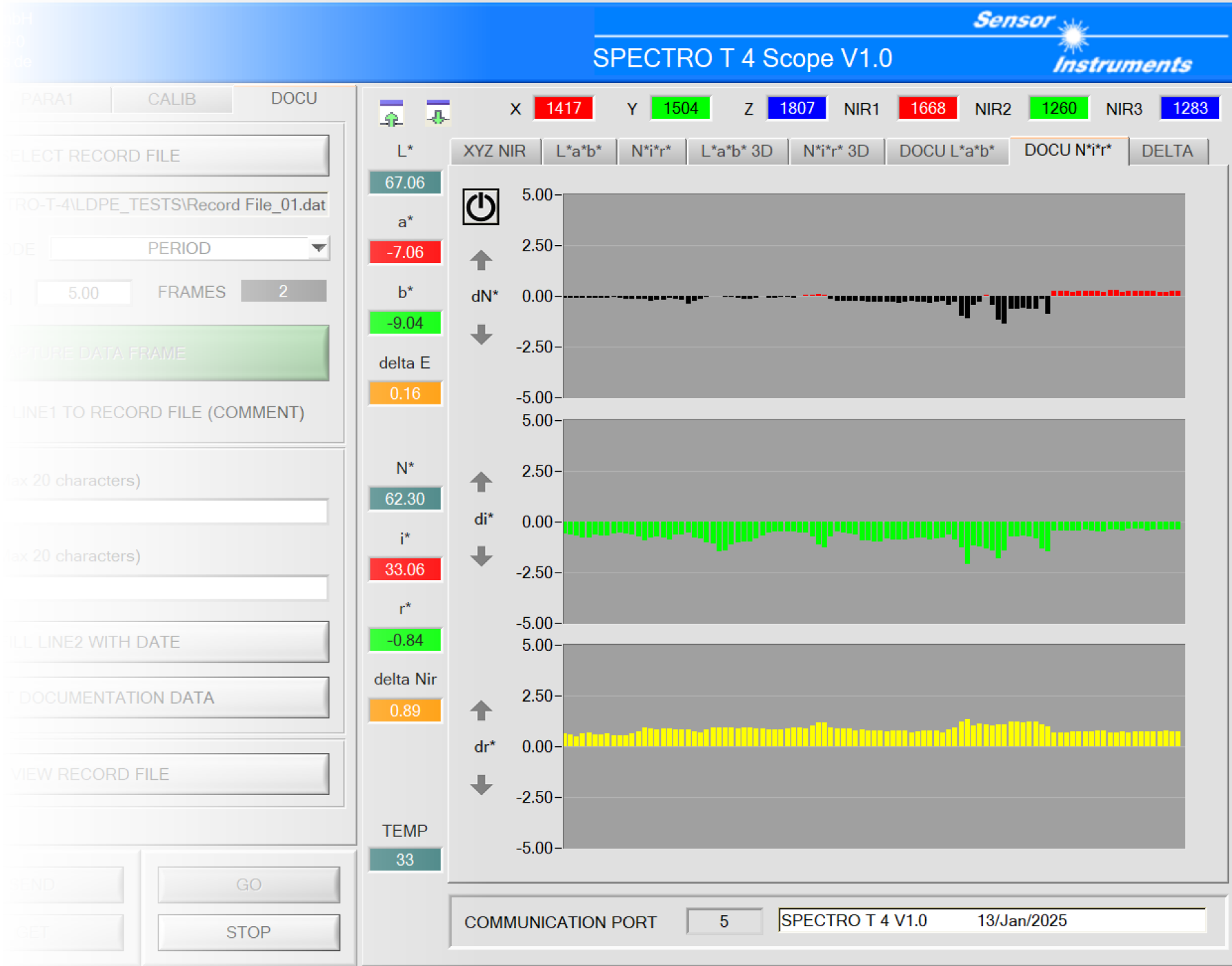


The sensor does it all – electronics and firmware take care of the measurement, the panel PC is just the window for viewing and logging.

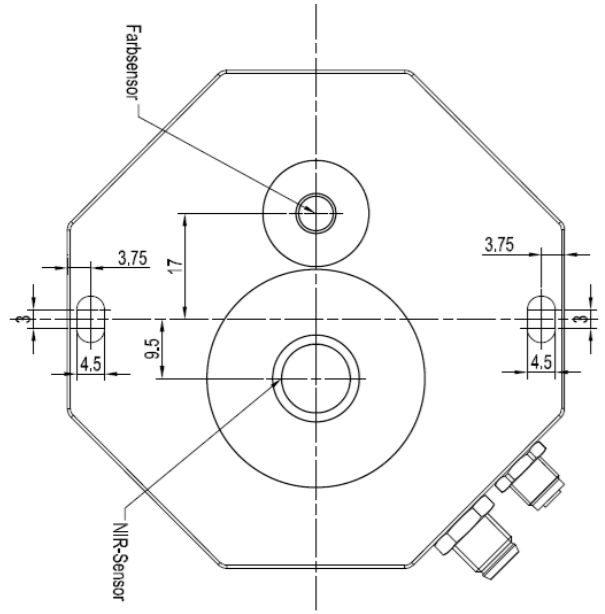
Alongside the color values L*a*b* and their deviations dL*, da* and db* from a chosen reference, the SPECTRO-T-4 also delivers measurement data in the near-infrared N*i*r* spectrum, including the differences dN*, di* and dr* relative to the set reference. It doesn't just save L*a*b* and N*i*r* with their reference deviations – the system also logs the raw X,Y,Z values in the visible, plus NIR1, NIR2, and NIR3 in the infrared.



In the shop floor it's the trend that counts, in QA it's the limits – and both sides get the data instantly, from production to office.
If a reading goes off course, the trend makes it visible early on – a big win for the operator. At the same time, the sensor can push its data over serial links to a master controller, which directs the dosing unit on how to react when tolerances are exceeded.
Cross a tolerance limit, and it pops right out: a colored frame in the trend view and a bold background highlight in the delta display.



SPECTRO-T-4-10-DIF-VISNIR



Connection to PLC:
4-pole M8 connector Binder Series 768/718

Pin:	Color:	Assignment:
1	brown	+24VDC (±10%)
2	white	IN0 (Digital 0: 0 … 1V, Digital 1: +Ub - 10%)
3	blue	GND (0V)
4	black	OUT0 (Digital 0: 0 … 1V, Digital 1: +Ub - 10%)

Connection to PLC:
4-pole M8 connector Binder Series 768/718

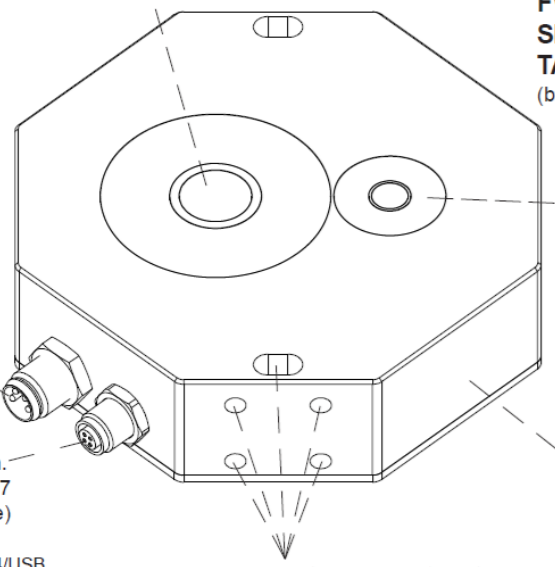
Pin:	Color:	Assignment:
1	brown	+24VDC (±10%)
2	white	RS485-A
3	blue	GND (0V)
4	black	RS485-B

Connection to PC:
4-pole fem. connector Binder Series 707

Pin:	Assignment:
1	+24VDC (+Ub, OUT)
2	GND (0V)
3	RxD
4	TxD

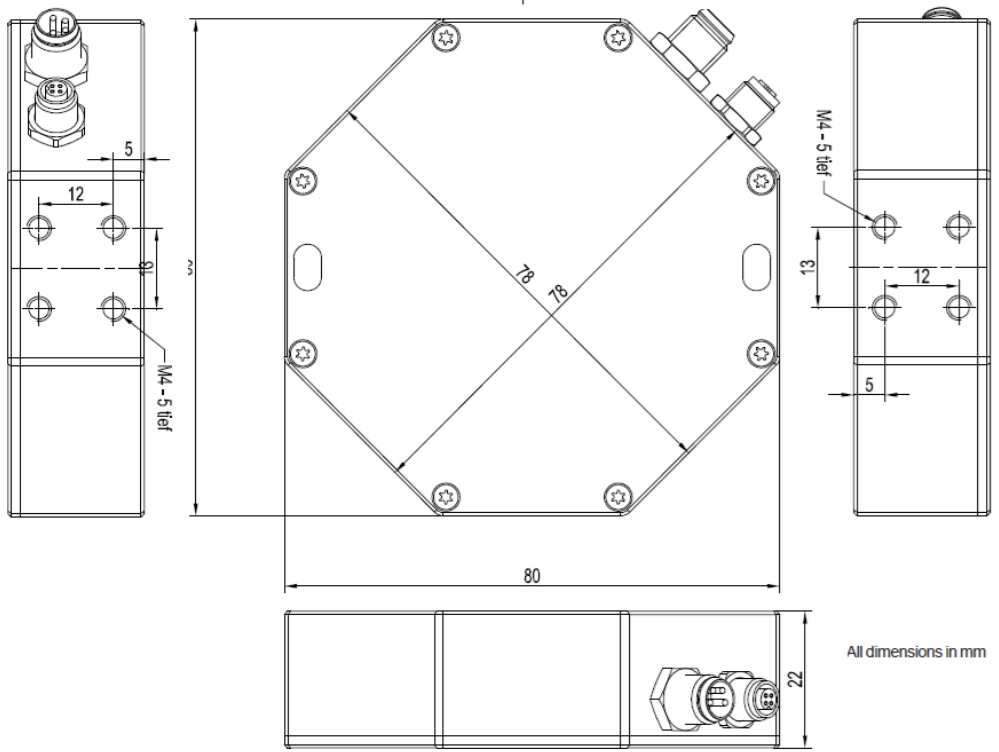
SPECTRO-T-4-10-DIF-VISNIR (I/O version)
SPECTRO-T-4-10-DIF-VISNIR-RS485 (RS485 version)
(incl. Windows® PC software SPECTRO-T-4-DOCAL-Scope)

VISNIR:
In the VIS range: a white light source and an integrated triple receiver for the red, green, and blue components (signals X, Y, Z).
In the NIR range: three light sources with different wavelengths and a broadband photodiode (signals NIR1, NIR2, NIR3).



Accessories:

SG-B270-75 (sight glass)
FW-B270-75-OFL (offline unit)
SPECTRO-T-4-10-HANDLE (handle)
TABUN-13“ (V1.1)
(battery-powered tablet PC)



All dimensions in mm

Clarity about Color and Polymer Type

Color L*a*b* and NIR measurement N*i*r*

Maintain control over the recyclate

Our specialists are happy to tell you more about it

Tel.: +49(0)8544 9719-0

info@sensorinstruments.de

sensorinstruments.de