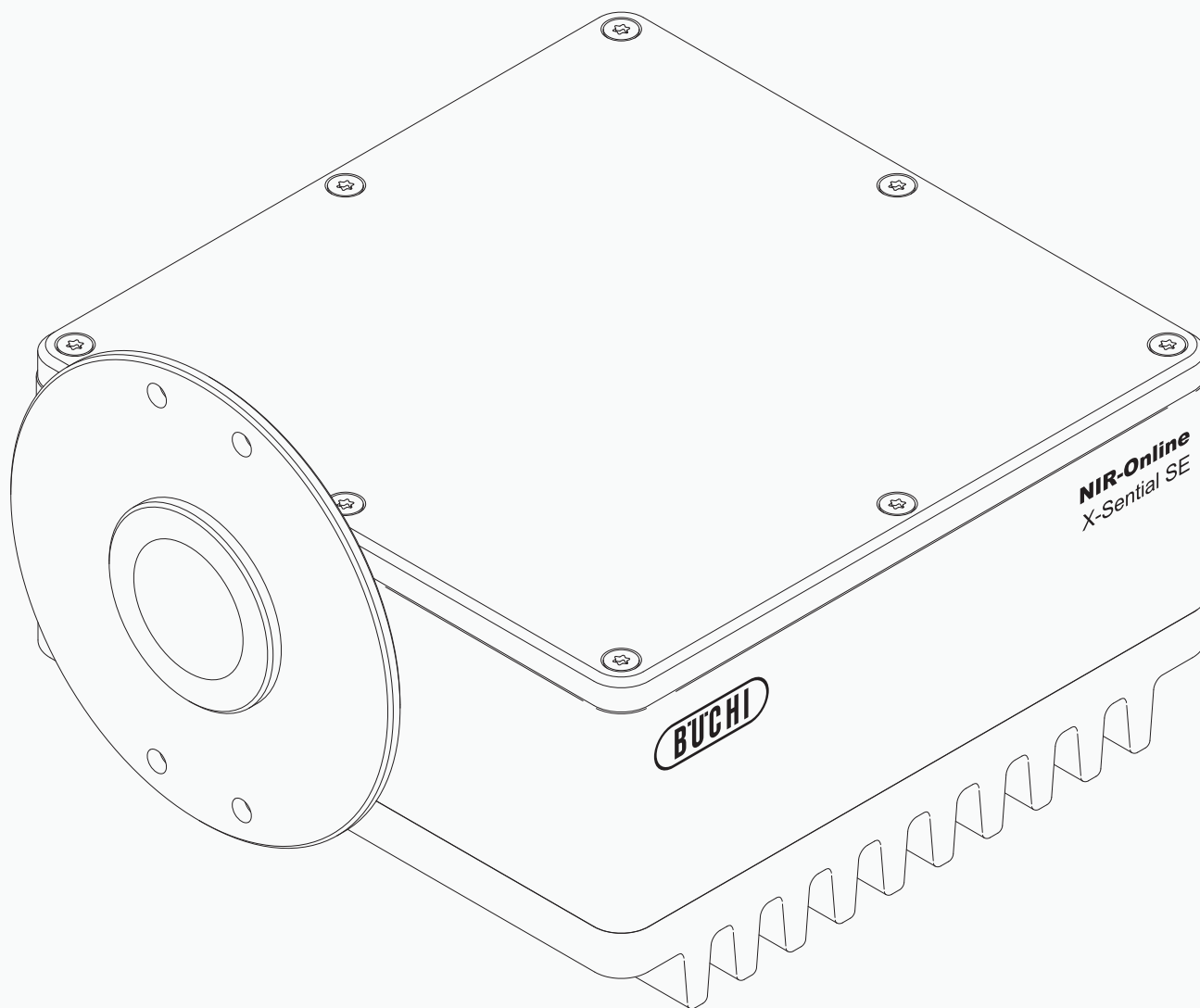




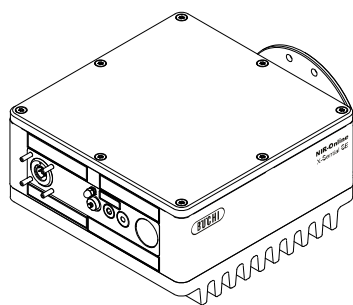
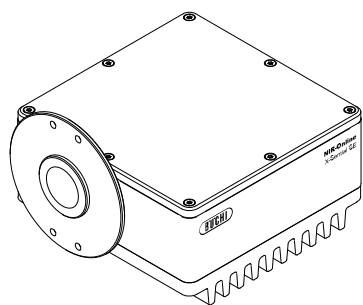
Technical data sheet

X-Sential™ SE

All NIR-Online sensors are based on diode-array technology. The compact, robust instrument is equipped with a flange and sapphire window. It can be directly mounted to a process vessel or tube. Additional accessories for solid and liquid products are available.



Standard instrument front and rear view



Scope of delivery



NOTE

The scope of delivery depends on the configuration of the purchase order.

Components and accessories are supplied according to the requirements specified in the purchase order, confirmed through the order confirmation, and listed on the delivery note.

The product number that identifies the configuration can be found on the type plate. See Type plate.

Any optional accessories or additional items requested are included as specified, ensuring alignment with the agreed-upon term.

Order codes

Please refer to the order code matrix below to identify the configuration.

	1	1	X	E							0	0	0
1 Spectrometer													
0 NIR only													
1 NIR + VIS													
2 VIS only													
2 Process integration													
0 Standard flange, FM													
1 Hygienic inline flange, HIF													
2 Overbelt, OB													
3 Sealing material													
0 EPDM													
1 FKM													
4 Accessory control													
0 No accessory control, IP 69													
1 Yes, ACC (prepared for XL-Feeder, X-Rot, X-Feeder), IP 6X													
5 Ex protection													
9 None (general purpose only), GP													
2 Dust-Ex ATEX, Zone 22, Dc													
6 Cooling													
0 Passive cooling													

Technical data

X-Sential™ SE

Specifications	X-Sential™ SE	X-Sential™ SE with hygienic inline flange
Dimensions (W × D × H)	229 × 220 × 115 mm	241 × 220 × 115 mm
Weight	8 kg	8 kg
Max. operating pressure	30 bar	30 bar
Product temperature (at flange)	-10 °C to +70 °C	-10 °C to +110 °C
Vibrations	0.2 G at 0.1–150 Hz	0.2 G at 0.1–150 Hz
Wavelength spectrum NIR range	950–1,700 nm	950–1,700 nm
Wavelength spectrum VIS range	450–950 nm	450–950 nm
Measurement window size	40 mm	23 mm
Number of pixels NIR	256	256
Number of pixels VIS	256	256
Detector technology NIR/VIS	Diode array	Diode array
Average measurement time	20 spectra/s	20 spectra/s
Temperature stabilization	ASDC (Advanced Spectral Drift Control): active temperature control to ±1 °C from set system operating temperature. Deviations will lead to automatic white reference measurement to account for spectral drifts.	ASDC (Advanced Spectral Drift Control): active temperature control to ±1 °C from set system operating temperature. Deviations will lead to automatic white reference measurement to account for spectral drifts.
IP Code	Depends on digit 4 of order code	Depends on digit 4 of order code
Light source	Tungsten-halogen dual lamp ¹	Tungsten-halogen dual lamp ¹
Lamp lifetime	18,000 h (2 × 9,000 h)	18,000 h (2 × 9,000 h)
Minimum clearance on all sides	100 mm	100 mm
Connection voltage	12.0–14.5 VDC ±10% <200 mVpp	12.0–14.5 VDC ±10% <200 mVpp
Power consumption	Nominal 25 W Maximum 43.5 W	Nominal 25 W Maximum 43.5 W
Overvoltage category	II	II
Appliance class	III	III
Pollution degree	2	2
ATEX (option) 	Dust: II 3D Ex tc IIIC T85 °C Dc	
EMC environment	Industrial environment	Industrial environment
EMC emission class	Class B	Class B
EMC standard	IEC 61326-2-3	IEC 61326-2-3

¹ Single lamp module for overbelt variant.

Materials

Component	Materials of construction
Casing	1.4404
Passive cooler GP	Aluminum with coating, EPOFLON FDA Compliant
Passive Cooler DustEX	Aluminium with coating, EPOFLON conductive, FDA compliant
Seals (housing and flange)	EPDM or FKM (depends on configuration), all interface sealings are FKM, all sealing materials are FDA approved
Hygienic inline flange	Gold-soldered

Ambient conditions

For indoor and outdoor use.

Specifications	X-Sential™ SE	X-Sential™ SE with hygienic inline flange
Ambient temperature	-10 to +40 °C	-10 to +40 °C
Max. relative air humidity	80% for temperatures up to 31 °C decreasing linearly to 50% relative humidity at 40 °C	80% for temperatures up to 31 °C decreasing linearly to 50% relative humidity at 40 °C
Max. altitude above sea level	2,000 m	2,000 m
Storage temperature	max. 45 °C	max. 45 °C

Computer system requirements

The system requirements for the computer are as follows:

Operating system	Windows 11, Windows 10 until EOL
Central processing unit	For single sensor: Intel Core i5 (12 th Gen or newer), equivalent AMD For multiple sensors: Intel Core i7 (12 th Gen or newer), equivalent AMD
RAM	At least 16 GB
Hard disk space	At least 512 GB SSD and 1 TB HDD of free disk space Use a hard disk suitable for continuous operation (average 20 GB per sensor per year)
Data backup	At least 1 TB of free disk space
Network or external hard disk	50 GB per sensor per year
Screen resolution	At least 1920x1080 Recommended 2560x1440
LAN	At least 1 x 100 Mbit/s LAN
USB 2.0/3.0	At least 1 USB connection per sensor and 1x USB per DataLab I/O box
PCI/PCIe	1 slot for Profibus card (for Profibus connection)
Software	Microsoft Word and Microsoft Excel 2010 or later PDF reader for operation manual

Sensor portfolio

Different detectors can be combined in one instrument to meet a wide variety of requirements.

Instrument configuration	NIR	VIS	Dual lamp	Measuring distance	Dust-Ex
X-Sential™ SE 11XE-Series	•	•	•	0 - 20 mm	•
X-One 11X1-Series	•		•	0 - 20 mm	•
X-Three 11X3-Series	•	•	•	0 - 20 mm	•
X-Beam 002 11XB2-Series	•	•		20 - 200 mm	•
X-FFPA 11XF-Series	•	•		immersion	•

Software

The sensor is controlled via the SX-Suite software package. It consists of the following components:

Name	Description	Typical usage	User	Occurrence
SX-Server	Instrument driver / usage of special functions	Read out instrument status	Operator	As required
		Setup of instrument hardware	NIR admin	For installation and maintenance

Name	Special function	Description	User	Occurrence
SX-Server	Conveyor belt	Optimized for measurement of moving objects on a conveyor belt	NIR admin	As required
	Mix	Control end-point of mixing processes	NIR admin	As required
	Sample movement detection	Verify sample flow	NIR admin	As required

Name	Description	Typical usage	User	Occurrence
SX-Center	User interface (online/lab mode)	Recipe/product and calibration management	Operator	Daily workflow (if not fully automated)
		View results (table, trend, charts, reports)		
		Reference data management		
SX-Backup	Data backup scheduler	Automated backup of measurement data, results and calibrations	NIR admin	During installation

Name	Special function	Description	User	Occurrence
SX-Run	Software restart	Automatic software restart in case of a crash	-	As required

Optional software

Software	Description	Typical usage	User	Occurrence
AutoCal®	Automated calibration feature	If new reference data is available the calibration is updated and optimized automatically	Operator (to enter reference data)	When calibration update is needed
SX-Plus	Chemometric software	Manual build up or optimization of existing calibrations	NIR-admin	When calibration update is needed
SX-Client	Remote data visualizing	Display the front page of SX-Center from a remote PC	Operator, NIR-admin	Daily use (if not fully automated)

Interfaces process analyzer to computer

Interface	Hardware	Details
RS422	USB adapter	• Converts the instruments RS422 signal via USB to a serial COM-port • 15 KV ESD protection
	LAN adapter	• Converts the instruments RS422 signal via ethernet to a virtual COM-port • 15 KV ESD protection

Interfaces to process control system

Interface	Hardware	Details
Analog	Datalab I/O	• Analog output of results • Alarm output • Heartbeat toggle for verification of interface • Total outputs: 8 max. 4 parameters via 4 - 20 mA max. 8 parameters via 1 - 9 V
Profibus	Softing PB-IF-1MS or PB-IF-1S	• Transmission counters to monitor function • Profibus and TCP/IP cannot be used at the same time • Additional NIR-Online Software (SX-Profi) required
TCP/IP, RS232	Standard ethernet card	• Transmission counters to monitor function • Profibus and TCP/IP cannot be used at the same time
OPC	Standard ethernet card	• Additional tool which allows communication between SX-Center and a process control system • Additional NIR-Online Software (SX-OPC) required
Modbus	Standard ethernet card	• Additional tool which allows communication between SX-Center and a process control system • Additional NIR-Online Software (SX-Modbus) required
REST API	Standard ethernet card	• Additional tool which allows communication between SX-Suite and a process control system or fleet management tool

Spare parts and accessories

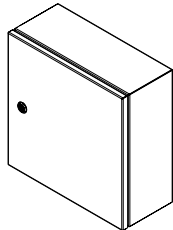
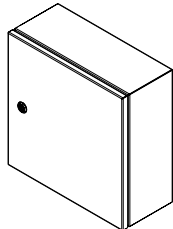
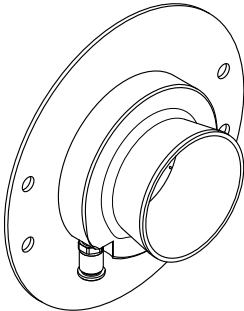
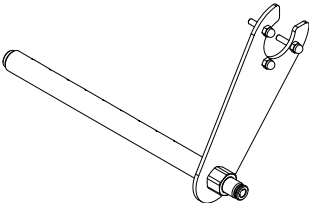
Use only genuine BUCHI consumables and spare parts in order to ensure correct, safe and reliable operation of the system.



NOTE

Any modifications of spare parts or assemblies are only allowed with the prior written permission of BUCHI.

Accessories

Description	Order no.	Image
Installation Box Standard	11060744	
Installation Box Standard EB	11063054	
Purge Adapter	11085208	
Air Cooler	11085413	



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Technical data are subject to change without notice
Quality Systems ISO 9001

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