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1. General technical data

The MS09 is a nitrate measuring system consisting of a photometer with 2 m cable with 8-pin M12 connector, a measuring chamber (flow cell) which allows a bypass installation, an büS interface, 3 cables of 1 m equipped with M12 connectors and a Y-splitter .

Plasa make sure the device materials are compatible with the fluid you are using. Detailed information can be found in chapter "2.1. Chemical Resistance Chart - Bürkert resistApp" on page 5. Photometer Housing in Stainless steel (1.6.571/1.4406) Socie Screw in stainless steel 316 (A4) Socie Screw in stainless steel 316 (A4) Socie in Screw in stainless steel 316 (A4) Screw in stainless steel 316 (A4) Screw in stainless steel 316 (A4) Screw connector and cable Screw connector in Zinc die casing, matte nickel-plated Compatibility With Online Analysis System Type 8905 Detailed information can be found in thapter "3. Dimensions" on page 5. Photometer 469×48.3 mm (L×G) with a 5 mm path Pasa Materia 210×65×18 mm Weight Photometer Approx. 320 kg Now call Approx. 0.40 kg Aessuring principle Attenuation Neterstee U Photometry - Light source: Xenon flash lamp - Detector: 3 photodiodes + filter Aessuring principle Attenuation Divide approx. 0.40 kg Aessuring range 0.4453 mg/ with a 5 mm path Compensation Turbidity Data-logger Jatiertace Micro SD card (not included in delivery) (for storage of device parameters, configuration and for easy replacement of photometer) desuring range 0.4453 mg/ with a 5 mm path Compensation Turbidity Data-logger Jatiertace Calibration/maintenance interval: 24 months Parameter deviation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuation Attenuatio	Product properties	
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Measurement interval ≥10 s Response time (t ₁₀₀) 10 s Electrical data Image: state		
Response time (t ₁₀₀) 10 s Electrical data Image: Second se		
Electrical data Operating voltage Photometer 24 V DC ± 10 % (through connector X8 of büS interface) büS interface 24 V DC ± 10 % - residual ripple 10 % ^{1,j} (through connector X4 connected to Online Analysis System Type 8905. Detailed information can be found in the data sheet of the Online analysis system, see data sheet Type 8905 ▶ for more information.) Power consumption ≤7 W		
Operating voltage Photometer 24 V DC ± 10 % (through connector X8 of büS interface) büS interface 24 V DC ± 10 % - residual ripple 10 % ^{1,1} (through connector X4 connected to Online Analysis System Type 8905. Detailed information can be found in the data sheet of the Online analysis system, see data sheet Type 8905 ▶ for more information.) Power consumption ≤7 W	100	
Photometer 24 V DC ± 10% (through connector X8 of büS interface) püS interface 24 V DC ± 10% - residual ripple 10% ^{1,1} (through connector X4 connected to Online Analysis System Type 8905. Detailed information can be found in the data sheet of the Online analysis system, see data sheet Type 8905 ▶ for more information.) Power consumption ≤7 W		
büS interface 24 V DC ± 10 % - residual ripple 10 % ^{1,1} (through connector X4 connected to Online Analysis System Type 8905. Detailed information can be found in the data sheet of the Online analysis system, see data sheet Type 8905 ▶ for more information.) Power consumption ≤7 W		24 V DC + 10% (through connector X8 of bijS interface)
System Type 8905. Detailed information can be found in the data sheet of the Online analysis system, see data sheet Type 8905 ▶ for more information.) Power consumption Photometer ≤7 W		
Photometer ≤7 W		System Type 8905. Detailed information can be found in the data sheet of the Online analysis
	Power consumption	
büS interface ≤2 W (of module alone)	Photometer	≤7 W
	büS interface	≤2 W (of module alone)



PhotometerEthemet (TCP/IP) Bürkert bUSbuS InterfaceBürkert bUSMedium daterFluidWater without particles: drinking water, industrial waterTemperature of the fluid sample+ Photometer alone: 3 barPressure of the fluid sample• With flow cell: ≤.1 barFlow rate of the fluid sample• With flow cell: 24 I/min Inflow velocity of the fluidProcess/Pipe connection & CommunicationProcess/Pipe connectionMite connections of flow cell (6 or 8-mm inlet, 6-mm outlet)Process/Pipe connectionM12 male plug, A-coded (X4 (N)) of büS interfaceData transferExternal communicationM12 male plug, A-coded (X4 (N)) of büS interfaceDrocess connectionM12 male plug, A-coded (X4 (N)) of büS interfaceDrocess connection• Through büS (Bürkert system bus, CANopen protocol) • By status LED: with RGB-LED based on NAMUR NE 107 on the büS interfaceDroctws- Storage: -200 (C (-4+176 °F) • Storage: -20	Current	
Output Filterial (TCP/IP) Photometer Bürkert büS Medium data Eukret büS Fluid Water without particles: drinking water, industrial water Temperature of the fluid sample + 2+40 °C (+ 36+104 °F) Pressure of the fluid sample + Photometer alone: 3 bar - With flow cell: 2 4/ I/min Inflow velocity of the fluid 0.110 m/s (0.3333 fps) sample Process/Pipe connection & communication Process connection Hose connections of flow cell (6 or 8-mm inlet, 6-mm outlet) Electrical connection M12 male plug, A-coded (X4 (IN)) of būS interface Data transfer External communication External communication • Through būS (Bürkert system bus, CANopen protocol) - · By status LED: with RGB-LED based on NAMUR NE 107 on the būS interface Approvals and Certificates The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation Environment and installation Photometer • Operating: +2+40 °C (+36+104 °F) Storage: -2070 °C (-4+158 °F) Storage: -2060 °C	büS interface	 Max. input current: 4 A for supply via X4 (M12, A-coded, plug)
PhotometerEthemet (TCP/IP) Bürkert bUSbuS InterfaceBürkert bUSMedium daterFluidWater without particles: drinking water, industrial waterTemperature of the fluid sample+ Photometer alone: 3 barPressure of the fluid sample• With flow cell: ≤.1 barFlow rate of the fluid sample• With flow cell: 24 I/min Inflow velocity of the fluidProcess/Pipe connection & CommunicationProcess/Pipe connectionMite connections of flow cell (6 or 8-mm inlet, 6-mm outlet)Process/Pipe connectionM12 male plug, A-coded (X4 (N)) of büS interfaceData transferExternal communicationM12 male plug, A-coded (X4 (N)) of büS interfaceDrocess connectionM12 male plug, A-coded (X4 (N)) of büS interfaceDrocess connection• Through büS (Bürkert system bus, CANopen protocol) • By status LED: with RGB-LED based on NAMUR NE 107 on the büS interfaceDroctws- Storage: -200 (C (-4+176 °F) • Storage: -20		Max. output current: 4 A in total with supply via X4
bus Bürkert bus Medium data Medium data Fluid Water without particles: drinking water, industrial water Temperature of the fluid sample +2+40 °C (+36+104 °F) Pressure of the fluid sample +2+40 °C (+36+104 °F) Pressure of the fluid sample With flow cell: ≤1 bar Flow rate of the fluid sample With flow cell: ≤1 bar Process/Pipe connection & communication Process/Pipe connection & connections of flow cell (6 or 8-mm inlet, 6-mm outlet) Process/Pipe connection M12 male plug, A-coded (K4 (IN)) of būs interface Data transfer - External communication N12 male plug, A-coded (K4 (IN)) of būs interface Data transfer - External communication • Through būS (Bürkert system bus, CANopen protocol) • By status LED: with RGB-LED based on NAMUR NE 107 on the būS interface Approvals and Certificates The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation - Applex storage: -20	Output	
Medium data Function Fluid Water without particles: drinking water, industrial water Temperature of the fluid sample + 2 +40 °C (+ 36 + 104 °F) Pressure of the fluid sample • Photometer alone: 3 bar • With flow cell: 1 bar • With flow cell: 41/min Flow rate of the fluid sample • With flow cell: 41/min Inflow velocity of the fluid 0.110 m/s (0.3333 fps) sample • Process/Pipe connection & Communication Process Connection Mose connections of flow cell (6 or 8-mm inlet, 6-mm outlet) Electrical connection M12 male plug, A-coded (X4 (IN)) of büS interface Data transfer • Through büS (Bürkert system bus, CANopen protocol) • By status LED: with RGB-LED based on NAMUR NE 107 on the büS interface Approvals and Certificates The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation The applied standards, which verify Conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation • Operating: +2+40 °C (+36+104 °F) büS interface • Opera	Photometer	Ethernet (TCP/IP)
Fluid Water without particles: drinking water, industrial water Temperature of the fluid sample +2+40 °C (+36+104 °F) Pressure of the fluid sample Photometer alone: 3 bar • With flow cell: ≤1 bar Flow rate of the fluid sample With flow cell: ≤1.14 //min Inflow velocity of the fluid 0.110 m/s (0.3333 fps) sample Process/Pipe connection & communication Process connection Moze connections of flow cell (6 or 8-mm inlet, 6-mm outlet) Electrical connection M12 male plug, A-code (X4 (IN)) of būS interface Data transfer External communication External communication • Through büS (Bürkert system bus, CANopen protocol) • By status LED: with RGB-LED based on NAMUR NE 107 on the būS interface Approvals and Certificates The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (f applicable). Environment and installation • Operating: +2+40 °C (+36+104 °F) Abisent temperature • Operating: +2+40 °C (+36+104 °F) Photometer • Operating: -2060 °C (-4+176 °F) büS interface • Operating: -2060 °C (-4+160 °F) büS interface • Operating: -2060 °C	büS interface	Bürkert büS
Temperature of the fluid sample $+2+40 {}^\circ C (+36+104 {}^\circ F)$ Preserve of the fluid sample \cdot Photometer alone: 3 bar With flow cell: ≤ 1 bar \cdot With flow cell: ≤4 <i>Vmin</i> Inflow velocity of the fluid $0.110 m/s (0.3333 fps)$ sample Process/Pipe connection & communication Process connection Hose connections of flow cell (6 or 8-mm inlet, 6-mm outlet) Electrical connection M12 male plug, A-coded (X4 (IN)) of būS interface Data transfer External communication External communication \cdot Through būS (Bürkert system bus, CANopen protocol) \cdot By status LED: with RGB-LED based on NAMUR NE 107 on the būS interface Approvals and Certificates The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation Operating: +2+40 °C (+36+104 °F) Ambient temperature • Operating: +2+40 °C (+36+104 °F) Photometer • Operating: +2+40 °C (+36+104 °F) būS interface • Operating: -2060 °C (-4+176 °F) būS interface • Operating: -2060 °C (-4+138 °F) Relative air humidity < 90 %, without condensation	Medium data	
Pressure of the fluid sample Photometer alone: 3 bar With flow cell: ≤ 1 bar Provessed of the fluid sample With flow cell: 2 4 <i>U</i>min Inflow velocity of the fluid O.1 10 m/s (0.3333 fps) sample Process/Pipe connection & communication Process connection Hose connections of flow cell (6 or 8-mm inlet, 6-mm outlet) Electrical connection M12 male plug, A-coded (X4 (IN)) of büS interface Data transfer External communication Through büS (Bürkert system bus, CANopen protocol) By status LED: with RGB-LED based on NAMUR NE 107 on the büS interface Approvals and Certificates Directives CE directive The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (f applicable). Environment and installation Anbient temperature Photometer Operating: +2+40 °C (+3+104 °F) Storage: -20+80 °C (-4+176 °F) büS interface Operating: -2060 °C (-4+138 °F) Relative air humidity s90 %, without condensation Height above sea level Max. 2000 m Operating: -2060 °C (-4+158 °F) Relative air humidity Fixed Degree of protection Photometer IP66 according to IEC/EN 60529, NEMA 6P büS interface IP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections)	Fluid	Water without particles: drinking water, industrial water
• With flow cell: ≤ 1 bar Flow rate of the fluid sample With flow cell: 2 4 //min Inflow velocity of the fluid 0.110 m/s (0.3333 fps) sample Process/Pipe connection & communication Process/Pipe connection & communication Hose connections of flow cell (6 or 8-mm inlet, 6-mm outlet) Electrical connection M12 male plug, A-coded (X4 (IN)) of büS interface Data transfer • Through büS (Bürkert system bus, CANopen protocol) • By status LED: with RGB-LED based on NAMUR NE 107 on the büS interface Approvals and Certificates • The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation • Operating: +2+40 °C (+36+104 °F) Ambient temperature • Operating: -2060 °C (-4+176 °F) búS interface • Operating: -2060 °C (-4+186 °F) Relative air humidity ≤90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipeent mobility Fixed Degree of protection P68 according to EV/EC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 acording to UL/EN 6101	Temperature of the fluid sample	+2+40 °C (+36+104 °F)
Flow rate of the fluid sample With flow cell: 24 l/min Inflow velocity of the fluid 0.110 m/s (0.3333 fps) sample Process/Pipe connection & communication Process/Pipe connection & communication Hose connections of flow cell (6 or 8-mm inlet, 6-mm outlet) Electrical connection M12 male plug, A-coded (X4 (IN)) of büS interface Data transfer External communication External communication • Through büS (Bürkert system bus, CANopen protocol) • By status LED: with RGB-LED based on NAMUR NE 107 on the büS interface Approvals and Certificates Directives CE directive The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation The applied standards (* 6°, 4+ 104 °F) • Storage: -20+80 °C (+36+104 °F) • Storage: -20+80 °C (-4+ 140 °F) • Storage: -20+80 °C (-4+ 140 °F) • Storage: -2060 °C (-4+ 140 °F) büS interface • Operating: -2060 °C (-4+ 140 °F) • Storage: -2060 °C (-4+ 140 °F) • Storage: -2060 °C (-4+ 140 °F) büS interface • Operating: -2060 °C (-4+ 160 °F) büS orerating condition Continuous<	Pressure of the fluid sample	Photometer alone: 3 bar
Inflow velocity of the fluid sample 0.110 m/s (0.3333 fps) Process/Pipe connection & communication Process connection Hose connections of flow cell (6 or 8-mm inlet, 6-mm outlet) Electrical connection M12 male plug, A-coded (X4 (IN)) of büS interface Data transfer Electrical connection External communication • Through büS (Bürkert system bus, CANopen protocol) • By status LED: with RGB-LED based on NAMUR NE 107 on the büS interface Approvals and Certificates Directives CE directive The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation Ambient temperature Photometer • Operating: +2+40 °C (+36+104 °F) • Storage: -20+80 °C (+4+176 °F) büS interface • Operating: -2060 °C (-4+180 °F) Relative air humidity ≤90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection Photometer Photometer IP68 according to IEC/EN 60529, NEMA 6P		• With flow cell: ≤1 bar
sample Process/Pipe connection & communication Process connection Hose connections of flow cell (6 or 8-mm inlet, 6-mm outlet) Electrical connection M12 male plug, A-coded (X4 (IN)) of büS interface Data transfer External communication External communication • Through büS (Bürkert system bus, CANopen protocol) • By status LED: with RGB-LED based on NAMUR NE 107 on the büS interface Approvals and Certificates Directives CE directive The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation Ambient temperature Photometer • Operating: +2+40 °C (+36+104 °F) • Storage: -2060 °C (-4+176 °F) buš interface • Operating: -2060 °C (-4+176 °F) buš Storage: -2070 °C (-4+140 °F) • Storage: -2070 °C (-4+158 °F) Relative air humidity ≤90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection Protometer Photometer IP68 according t	Flow rate of the fluid sample	With flow cell: 24 I/min
Process connection Hose connections of flow cell (6 or 8-mm inlet, 6-mm outlet) Electrical connection M12 male plug, A-coded (X4 (IN)) of büS interface Data transfer • Through büS (Bürkert system bus, CANopen protocol) • By status LED: with RGB-LED based on NAMUR NE 107 on the büS interface Approvals and Certificates Directives CE directive The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation Ambient temperature Photometer • Operating: +2+40 °C (+36+104 °F) • Storage: -20+80 °C (-4+176 °F) • Operating: -2060 °C (-4+176 °F) • Storage: -2070 °C(-4+158 °F) Relative air humidity ≤90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection P65, IP67 and IP69k according to EV/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1	Inflow velocity of the fluid sample	0.110 m/s (0.3333 fps)
Electrical connection M12 male plug, A-coded (X4 (IN)) of büS interface Data transfer • Through büS (Bürkert system bus, CANopen protocol) External communication • By status LED: with RGB-LED based on NAMUR NE 107 on the büS interface Approvals and Certificates • The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation • Operating: +2+40 °C (+36+104 °F) * Storage: -20+80 °C (-4+176 °F) • Storage: -20+80 °C (-4+176 °F) büS interface • Operating: +2+40 °C (-4+180 °F) * Storage: -20+80 °C (-4+180 °F) • Storage: -20+80 °C (-4+180 °F) * Storage: -20+80 °C (-4+180 °F) • Storage: -20+80 °C (-4+180 °F) * Storage: -20+80 °C (-4+180 °F) • Storage: -20+80 °C (-4+180 °F) * Storage: -20+80 °C (-4+180 °F) • Storage: -20180 °C (-4+180 °F) Belative air humidity >90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection P68 according to IEC/EN 60529, NEMA 6P büS interface IP65, IP67 and IP69k according to E	Process/Pipe connection & con	mmunication
Data transfer External communication • Through büS (Bürkert system bus, CANopen protocol) • By status LED: with RGB-LED based on NAMUR NE 107 on the büS interface Approvals and Certificates Directives CE directive The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation Ambient temperature Photometer • Operating: +2+40 °C (+36+104 °F) • Storage: -20+80 °C (-4+176 °F) büS interface • Operating: -2060 °C (-4+140 °F) • Storage: -2070 °C(-4+158 °F) Relative air humidity ≤90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection Photometer Photometer IP68 according to IEC/EN 60529, NEMA 6P büS interface IP65, IP67 according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1	Process connection	Hose connections of flow cell (6 or 8-mm inlet, 6-mm outlet)
External communication Through büS (Bürkert system bus, CANopen protocol) By status LED: with RGB-LED based on NAMUR NE 107 on the büS interface Approvals and Certificates Directives CE directive The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation Ambient temperature Photometer Operating: +2+40 °C (+36+104 °F) büS interface 0 Operating: -20+80 °C (-4+176 °F) büS interface 90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Photometer Photometer Photometer Height above sea level Max. 2000 m Operating condition Equipment mobility	Electrical connection	M12 male plug, A-coded (X4 (IN)) of büS interface
 By status LED: with RGB-LED based on NAMUR NE 107 on the büS interface Approvals and Certificates Directives CE directive The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation Ambient temperature Photometer Operating: +2+40 °C (+36+104 °F) Storage: -20+80 °C (-4+176 °F) büS interface Operating: -2060 °C (-4+140 °F) Storage: -2070 °C (-4+140 °F) Storage: -2070 °C (-4+158 °F) Relative air humidity \$90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection Photometer IP68 according to IEC/EN 60529, NEMA 6P büS interface IP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1 	Data transfer	
Approvals and Certificates Directives CE directive The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation Ambient temperature Photometer • Operating: +2+40 °C (+36+104 °F) • Storage: -20+80 °C (-4+176 °F) • Storage: -20+80 °C (-4+140 °F) • Storage: -20+00 °C (-4+176 °F) • Storage: -2060 °C (-4+140 °F) • Storage: -2000 °C (-4+176 °F) • Storage: -2070 °C (-4+158 °F) Relative air humidity ≤90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection Photometer Photometer IP68 according to IEC/EN 60529, NEMA 6P büS interface IP68 according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1	External communication	Through büS (Bürkert system bus, CANopen protocol)
Approvals and Certificates Directives CE directive The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation Ambient temperature Photometer • Operating: +2+40 °C (+36+104 °F) • Storage: -20+80 °C (-4+176 °F) • Storage: -20+80 °C (-4+140 °F) • Storage: -20+00 °C (-4+176 °F) • Storage: -2060 °C (-4+140 °F) • Storage: -2000 °C (-4+176 °F) • Storage: -2070 °C (-4+158 °F) Relative air humidity ≤90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection Photometer Photometer IP68 according to IEC/EN 60529, NEMA 6P büS interface IP68 according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1		By status LED: with RGB-LED based on NAMUB NE 107 on the büS interface
CE directive The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation Ambient temperature Photometer • Operating: +2+40 °C (+36+104 °F) • Storage: -20+80 °C (-4+176 °F) • Storage: -20+80 °C (-4+176 °F) • Disc interface • Operating: -2060 °C (-4+140 °F) • Storage: -2070 °C(-4+158 °F) Relative air humidity ≤90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection Photometer Photometer IP68 according to IEC/EN 60529, NEMA 6P büS interface IP68 according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1	Approvals and Certificates	
Type Examination Certificate and/or the EU Declaration of conformity (if applicable). Environment and installation Ambient temperature Photometer • Operating: +2+40 °C (+36+104 °F) • Storage: -20+80 °C (-4+176 °F) büS interface • Operating: -2060 °C (-4+176 °F) • Storage: -20+80 °C (-4+158 °F) Relative air humidity ≤90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection Photometer Photometer IP68 according to IEC/EN 60529, NEMA 6P büS interface IP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1	Directives	
Environment and installation Ambient temperature Photometer • Operating: +2+40 °C (+36+104 °F) • Storage: -20+80 °C (-4+176 °F) büS interface • Operating: -2060 °C (-4+140 °F) • Storage: -2070 °C (-4+158 °F) • Storage: -2070 °C (-4+158 °F) Relative air humidity ≤90%, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection Photometer Photometer IP68 according to IEC/EN 60529, NEMA 6P büS interface IP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1	CE directive	
Photometer• Operating: +2+40 °C (+36+104 °F) • Storage: -20+80 °C (-4+176 °F) • Operating: -2060 °C (-4+140 °F) • Storage: -2070 °C (-4+140 °F) • Storage: -2070 °C (-4+158 °F)Relative air humidity≤90 %, without condensationHeight above sea levelMax. 2000 mOperating conditionContinuousEquipment mobilityFixedDegree of protectionPhotometerPhotometerIP68 according to IEC/EN 60529, NEMA 6PbüS interfaceIP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections)CableIP65, IP67 according to EN/IEC 60529Installation categoryCategory I according to UL/EN 61010-1	Environment and installation	
Photometer• Operating: +2+40 °C (+36+104 °F) • Storage: -20+80 °C (-4+176 °F) • Operating: -2060 °C (-4+140 °F) • Storage: -2070 °C (-4+140 °F) • Storage: -2070 °C (-4+158 °F)Relative air humidity≤90 %, without condensationHeight above sea levelMax. 2000 mOperating conditionContinuousEquipment mobilityFixedDegree of protectionPhotometerPhotometerIP68 according to IEC/EN 60529, NEMA 6PbüS interfaceIP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections)CableIP65, IP67 according to EN/IEC 60529Installation categoryCategory I according to UL/EN 61010-1	Ambient temperature	
 Storage: -20+80 °C (-4+176 °F) Operating: -2060 °C (-4+140 °F) Storage: -2070 °C(-4+158 °F) Relative air humidity ≤90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection Photometer IP68 according to IEC/EN 60529, NEMA 6P büS interface IP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1 	•	• Operating: +2+40 °C (+36+104 °F)
büS interface• Operating: -2060 °C (-4+140 °F) • Storage: -2070 °C(-4+158 °F)Relative air humidity<90 %, without condensation		
• Storage: -2070 °C(-4+158 °F) Relative air humidity ≤90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection Photometer IP68 according to IEC/EN 60529, NEMA 6P büS interface IP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1	büS interface	
Relative air humidity ≤90 %, without condensation Height above sea level Max. 2000 m Operating condition Continuous Equipment mobility Fixed Degree of protection Photometer IP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1		
Height above sea levelMax. 2000 mOperating conditionContinuousEquipment mobilityFixedDegree of protectionIP68 according to IEC/EN 60529, NEMA 6PbüS interfaceIP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections)CableIP65, IP67 according to EN/IEC 60529Installation categoryCategory I according to UL/EN 61010-1	Polotivo cir humidity	
Operating condition Continuous Equipment mobility Fixed Degree of protection IP68 according to IEC/EN 60529, NEMA 6P büS interface IP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1		
Equipment mobility Fixed Degree of protection Photometer IP68 according to IEC/EN 60529, NEMA 6P büS interface IP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1	0	
Degree of protection Photometer IP68 according to IEC/EN 60529, NEMA 6P büS interface IP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1		
Photometer IP68 according to IEC/EN 60529, NEMA 6P büS interface IP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1		
büS interface IP65, IP67 and IP69k according to EN/IEC 60529 (with cables connected and with protective caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1	0	
caps on unused connections) Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1		.
Cable IP65, IP67 according to EN/IEC 60529 Installation category Category I according to UL/EN 61010-1	DUS IIILEITACE	
Installation category Category I according to UL/EN 61010-1	Cable	· · ·
	Pollution degree	Degree 2 according to UL/EN 61010-1

1.) The requirements of the attached components need to be considered in the selection of the power supply as well.



2. Materials

2.1. Chemical Resistance Chart – Bürkert resistApp



Bürkert resistApp – Chemical Resistance Chart

You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

Start Chemical Resistance Check

3. Dimensions

3.1. Photometer installed into the measuring chamber (flow cell)

Note:

Dimensions in mm, unless otherwise stated





3.2. büS interface

Note:

Dimensions in mm, unless otherwise stated



4. Device/Process connections

4.1. büS interface

Connection details

Note:

Device automatically detects whether the power supply is connected to X4.



	No.	Description
	X1	M12-A, socket, not used
	X2	M12-A, socket,not used
(5	X3	M12-A, socket, not used
	X4	M12-A, plug, Power IN 24 V DC, max. 4 A and büS/CANopen
(6	X5	M12-A, socket, not used
	X6	M12-A, socket, not used
(7	X7	M12-A, terminating resistor 120 Ω, if necessary
	X8	M12-A, socket, Power OUT 24 V DC, max. 4 A, to power the photometer
<8	X01	M12-D, socket, not used
	X02	M12-D, socket, Ethernet, e.g. for Ethernet integration of the photometer
	X03	M12-L, plug, not used
(02	X04	M12-L, socket, not used



5. Product installation

5.1. Installation notes

The nitrate measuring system is designed for use with the online analysis system, Type 8905. It is simply connected via a cable to Type 8905. But it is also possible to connect the nitrate measuring system to a PC with the Bürkert Communicator Software Type 8920 with help of the USB-büS Interface Set Type 8923.

See data sheet Type 8905 ▶ Online Analysis System, software manual Type 8920 ▶ or chapter "8.2. USB-büS Interface Set Type 8923" on page 9 for more information.

6. Product operation

6.1. Measuring principle

Note:

For optimal use of the sensor, it is essential to understand the measuring principle and measurement setup which the sensor is based on. The following is an overview of the measurement principle, the optical arrangement and the subsequent calculation.

The photometer essentially consists of four parts: a defined light source, a lens system, the optical path through the medium and a second lens system with three photodiodes as detectors. The arrangement of these parts is represented schematically in the following illustration.



A xenon flash lamp is used as a broadband light source. The light passes through the medium in the optical path and is partially absorbed by it. The photodiodes pick up the remaining light and determine its intensity "I" at defined wavelength points.

The weakening of the light when passing through the measurement medium is compared to the weakening caused by ultra-pure water. The measurement in ultra-pure water provides the so-called basic intensity " I_0 ". Using equation, the photometer determines the transmission T (= I/I_0) and the absorbance A (=-log₁₀T) for three defined wavelengths.

The integrated analysis software can calculate the corresponding concentrations from the absorption. The unit of the absorption value is the absorption unit [AU]. The manufacturer calibration is based on an allocation of the absorption units to a defined nitrate concentration based on standard nitrate solutions at a wavelength of 212 nm. An integrated compensation of turbidity and organics allows the measurement principle of the photometer to be described as attenuation.





6.3. Parameters

The photometer measures absorption at 212 nm. The parameter NO_3 is output.

Taking the path length into account, the absorption values [AU] are calculated with the unit [1/m] at 212, 254 and 360 nm. The photometer sensor uses the absorption at 212 nm for the detection of NO₃. Absorption at 254 (SAC₂₅₄) and 360 nm is used to correct organic compounds and turbidity. Optical path lengths of 0.3, 1, 2, 5 or 10 mm are available for the photometer. A longer variant of the photometer allows longer path lengths of 20 and 50 mm.

It is possible to adapt the sensor with scaling factors to laboratory analyses and local conditions. Please note that the manufacturer's calibration is not affected by the customer-specific calibration. The parameter NO₃ parameter can be scaled.

7. Product design and assembly

7.1. Product assembly





8. Product accessories

8.1. Bürkert Communicator Software Type 8920

Part of Bürkert's new EDIP program (Efficient Device Integration Platform) is the Bürkert Communicator. This software can be run under MS-Windows and it is available on Bürkert's website for free.

To install the software, click here ▶.

The Bürkert Communicator allows convenient system configuration and parametrisation of all connected field devices. An accessory part, the büS stick serves as the interface between computer and process instruments (see "9.4. Ordering chart accessories" on page 10). The Communicator allows:

- Diagnostics
- Parametrization
- Registration and storage of process data
- Graphical monitoring of the process data
- To update firmware of the büS device connected
- Guided re-calibration

8.2. USB-büS Interface Set Type 8923

See "9.4. Ordering chart accessories" on page 10 for ordering information.

Accessories	No.	Description
and the second se	1	Quick-Start
	2	Power supply: 100240 V AC/ 24 V DC 1 A and adaptors for power supply worldwide use
	3	büS terminating resistor on büS Y-splitter
	4	5-pin M12 circular male connector wired on free end cable
102	5	büS connection cable with 5-pin M12 circular male connector, micro USB B plug
9	6	büS adapter with 5-pin M12 circular male connector, A-coded to 5-pin M12 circular male connector, A-coded
	7	büS stick (USB to büS/CANopen adaptor)
	8	büS service cable with 5-pin M12 circular female connector, mini USB and circular plug-in connectors for power supply
5	9	Magnetic key
	10	CD - Communicator (30-day license without registration, update and licens- ing over Bürkert home page)

9. Ordering information

9.1. Bürkert eShop – Easy ordering and quick delivery



Bürkert eShop – Easy ordering and quick delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

Order online now



9.2. Bürkert product filter

Pracess Co	*1	Voltage / Frequency	Process	Pressure / Sealing
Type/	Sur	-		
Annes	- (Coluçue al liter		
-	-	Colupse at litter Nominal prossure m		Nominal pressure may
Accord	-			Nominal pressure may (gas)

Bürkert product filter - Get quickly to the right product

You want to select products comfortably based on your technical requirements? Use the Bürkert product filter and find suitable articles for your application quickly and easily.

Try out our product filter

9.3. Ordering chart

Description	Article no.
Nitrate measuring system (photometer + measuring chamber (flow cell) + büS interface + cables)	572113 🛒

	Further versions on request
>	Additional Nitrate measurement: other possible measuring ranges

9.4. Ordering chart accessories

Description		Article no.		
Nitrate photometer				
Measuring chamber (flow cell)				
büS interface				
Micro SD card				
Fluidic accessories				
Sample water pipe 4/6 mm	5 m	567793 🛒		
	10 m	567701 🛒		
	25 m	567794 🛒		
Hose connector angle, ¼" pipe 4/6 mm		782348 🛒		
Strainer 100 µm		772703 🛒		
Pressure reducer		772437 🛒		
Bubble trap		568492 🛒		
Set with a pressure reducer (including a 100 µm strainer, a sampling point and two G ¼" connections ing bracket with nut (for the pressure reducer), a pressure gauge (for the pressure reducer) and two q couplings		566319 ঢ়		
Filter housing made of plastic with NBR seal for filter element 50 μ m, inlet and outlet 1/4"		774292 🐖		
Filter housing made of plastic with NBR seal for filter element 90 μm or 140 $\mu m,$ inlet and outlet 1/4"		774287 🛒		
Filter element	50 µm	774293 🛒		
	90 µm	774290 🛒		
	140 µm	774291 🛒		
Type MZ20 cleaning system, 2 solutions See data sheet Type MZ20 		567124 🛒		
Cleaning set for optical		574346 🛒		
Calibration set	10 mm	574344 🐖		
	50 mm	574345 🛒		
Interface accessories				
büS Stick Set				
USB-büS-Interface Set 1, Type 8923 Detailed information can be found in chapter "8.2. USB-büS Interface Set Type 8923" on page 9.				
USB-büS Interface Set 2, Type 8923 (only büS Stick, cable and büS service cable)		772551 🛒		



Description	Article no.				
Connectors and sockets					
büS Y-distributor, 5-pin M12 circular female connector to 5-pin M12 circular male and 5-pin M12 circular connectors					
büS Y-distributor, 5-pin M12 circular female connector to 5-pin M12 circular male and 5-pin M12 circular connectors (power interrupt)					
büS adaptor M12 circular male connector A-coded - M12 circular male connector A-coded	772867 🛒				
büS termination, 5-pin M12 circular male connector	772424 🖳				
büS termination, 5-pin M12 circular female connector	772425 🛒				
Extensions					
5-pin M12 straight circular female and male connectors moulded on büS cable, shielded 0.5	m 772403 🛒				
1m	772404 🛒				
3 m	772405 🛒				
5 m	772406 🛒				
10 m					
20 г	n 772408 🛒				
Software					
Software Bürkert Communicator	Download Type 8920 ►				

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