

Product catalog



Table of Contents

Product Group	8
Product Group > Complete systems (9)	8
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 00R1 BlueBox R1 Controller	11
486 00P0 BlueBox Panel	13
485 0001 BlueSense transducer	15
486 0M60 Mobile UV/Vis Spectrometer System	18
488 2FA0 BlueMon Ammonium	21
488 2FP0 BlueMon Orthophosphate	23
488 2FP1 BlueMon Orthophosphate & Total Phosphorus	25
488 2TPN BlueMon Total Nitrogen & Total Phosphorus	27
Product Group > Measurement and control systems (3)	28
486 00R1 BlueBox R1 Controller	11
486 00P0 BlueBox Panel	13
485 0001 BlueSense transducer	15
Product Group > Online analysers (4)	28
488 2FA0 BlueMon Ammonium	21
488 2FP0 BlueMon Orthophosphate	23
488 2FP1 BlueMon Orthophosphate & Total Phosphorus	25
488 2TPN BlueMon Total Nitrogen & Total Phosphorus	27
Product Group > Spectrometer (4)	28
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31
Product Group > SmartModules (4)	32
486 CS00 BlueConnect Sensor Module	33
486 CI00 BlueConnect I/O Module	35
486 CP00 BlueConnect Plus Module	36
486 S810 Modbus / USB Converter	38
Product Group > Sensors (10)	38
461 6200 BlueTrace - Oil in Water Sensor	39
461 6780 BlueTrace - Turbidity Sensor	41
461 MSH0 Multi Sensor Head - MSH	43
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
461 2092 BlueEC Inductive Conductivity Sensor	45
461 4000 Galvanic oxygen sensor	47
461 4610 Optical oxygen sensor	48
461 5109 pH Electrode - Process	49

461 7410 Ion-selective electrode for ammonium	51
461 9009 ORP Electrode - Process	52
Product Group > Accessories (13)	52
462 6700 Retractable assembly	53
462 6753 Flow assembly for BlueTrace (stainless steel)	54
462 6754 Flow assembly for BlueTrace (PVC)	55
462 T020 Measuring pot BlueTrace	56
462 6125 Varinline® fitting for the ISA UV/Vis Spektrometer	57
462 T010 Measuring pot small	58
420 6362 ISA CALC+	59
420 6601 BlueGate Cloud-Service	61
420 8000 PC software for the BlueMon (SQL database)	64
462 1100 Protective immersion holder air flushing electrodes	66
462 2020 Flow through fitting for BlueEC conductivity sensor	67
462 5020 Flow through fitting for electrodes pH, ISE & Redox/ORP	68
420 6213 PC software for the BlueBox (SQL database)	69
Product Group > Software (3)	70
420 6362 ISA CALC+	59
420 8000 PC software for the BlueMon (SQL database)	64
420 6213 PC software for the BlueBox (SQL database)	69
Product Group > Web interface and cloud functionality (1)	70
420 6601 BlueGate Cloud-Service	61
Parameter	70
Parameter > Ammonium (7)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
488 2FA0 BlueMon Ammonium	21
461 MSH0 Multi Sensor Head - MSH	43
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
461 7410 Ion-selective electrode for ammonium	51
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Biochemical Oxygen Demand (BOD) (4)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > BOD5 (4)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31

Parameter > Chemical Oxygen Demand (COD) (4)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Colour / Hazen (4)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Conductivity (2)	70
461 MSH0 Multi Sensor Head - MSH	43
461 2092 BlueEC Inductive Conductivity Sensor	45
Parameter > Contamination alarm (3)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Dissolved Organic Carbon (DOC) (4)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Dissolved organic matter (2)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Dissolved Oxygen (3)	70
461 MSH0 Multi Sensor Head - MSH	43
461 4000 Galvanic oxygen sensor	47
461 4610 Optical oxygen sensor	48
Parameter > Fingerprint (3)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Level (1)	70
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
Parameter > Nitrate (5)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
461 MSH0 Multi Sensor Head - MSH	43
461 6600 BlueScan Plus - UV/Vis Spectrometer	29

486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Nitrite (4)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Oil in water (1)	70
461 6200 BlueTrace - Oil in Water Sensor	39
Parameter > Orthophosphate (6)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
488 2FP0 BlueMon Orthophosphate	23
488 2FP1 BlueMon Orthophosphate & Total Phosphorus	25
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > pH (2)	70
461 MSH0 Multi Sensor Head - MSH	43
461 5109 pH Electrode - Process	49
Parameter > Redox (ORP) (2)	70
461 MSH0 Multi Sensor Head - MSH	43
461 9009 ORP Electrode - Process	52
Parameter > Refined fuels in water (1)	70
461 6200 BlueTrace - Oil in Water Sensor	39
Parameter > SAC254 / UV254 (3)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Temperature (6)	70
461 6780 BlueTrace - Turbidity Sensor	41
461 MSH0 Multi Sensor Head - MSH	43
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
461 2092 BlueEC Inductive Conductivity Sensor	45
461 4000 Galvanic oxygen sensor	47
461 5109 pH Electrode - Process	49
Parameter > Total Nitrogen (TN) (5)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
488 2TPN BlueMon Total Nitrogen & Total Phosphorus	27
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31

Parameter > Total Organic Carbon (TOC) (4)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Total Phosphorous (TP) (6)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
488 2FP1 BlueMon Orthophosphate & Total Phosphorus	25
488 2TPN BlueMon Total Nitrogen & Total Phosphorus	27
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Total Suspended Solids (TSS) (5)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
461 6780 BlueTrace - Turbidity Sensor	41
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31
Parameter > Turbidity (3)	70
486 0M60 Mobile UV/Vis Spectrometer System	18
461 6780 BlueTrace - Turbidity Sensor	41
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
Parameter > Water pressure (1)	70
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
Method of Measurement	70
Method of Measurement > Conductivity (inductive) (2)	70
461 MSH0 Multi Sensor Head - MSH	43
461 2092 BlueEC Inductive Conductivity Sensor	45
Method of Measurement > Electrode chemical (1)	70
461 4000 Galvanic oxygen sensor	47
Method of Measurement > Fluorescence (1)	70
461 6200 BlueTrace - Oil in Water Sensor	39
Method of Measurement > Glass electrode (3)	70
461 MSH0 Multi Sensor Head - MSH	43
461 5109 pH Electrode - Process	49
461 9009 ORP Electrode - Process	52
Method of Measurement > ISE (2)	70
461 MSH0 Multi Sensor Head - MSH	43

461 7410 Ion-selective electrode for ammonium	51
Method of Measurement > Optical (3)	70
461 6200 BlueTrace - Oil in Water Sensor	39
461 6780 BlueTrace - Turbidity Sensor	41
461 4610 Optical oxygen sensor	48
Method of Measurement > Physical (1)	70
461 4000 Galvanic oxygen sensor	47
Method of Measurement > UV/Vis (4)	70
486 00RS-ISA-XX-UV-XX ISA - UV/Vis Spectrometer System	9
486 0M60 Mobile UV/Vis Spectrometer System	18
461 6600 BlueScan Plus - UV/Vis Spectrometer	29
486 6000 ISA - UV/Vis Spectrometer Module	31
Method of Measurement > Wet chemical (4)	70
488 2FA0 BlueMon Ammonium	21
488 2FP0 BlueMon Orthophosphate	23
488 2FP1 BlueMon Orthophosphate & Total Phosphorus	25
488 2TPN BlueMon Total Nitrogen & Total Phosphorus	27
Accessories	70
Accessories > Flow-through armatures (5)	70
462 6700 Retractable assembly	53
462 6753 Flow assembly for BlueTrace (stainless steel)	54
462 6754 Flow assembly for BlueTrace (PVC)	55
462 2020 Flow through fitting for BlueEC conductivity sensor	67
462 5020 Flow through fitting for electrodes pH, ISE & Redox/ORP	68
Accessories > Immersion assembly (1)	70
462 1100 Protective immersion holder air flushing electrodes	66
Accessories > Measuring pot (2)	70
462 T020 Measuring pot BlueTrace	56
462 T010 Measuring pot small	58
Product Group, Parameter, Method of Measurement, Accessories	8
Index	8
with each key word from each head line	72
Alphabetical Index	72
All of our products	9
Products	9

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Technical changes and mistakes are reserved.

Illustrations and pictures may differ from the original product.

ISA - UV/Vis Spectrometer System

Article number
486 00RS-ISA-XX-UV-
XX

The ISA - UV/Vis Spectrometer System is a compact UV/Vis spectrometer that allows the simultaneous determination of a variety of parameters, such as COD, Nitrate, TOC, TSS, BOD & DOC with one optical sensor.

Available parameters

The ISA UV/Vis spectrometer is always calibrated on-site using laboratory values. This customer-specific calibration ensures high measurement accuracy and the selection of the correct wavelengths. The system can be calibrated to the following parameters:

Ammonium, Biochemical oxygen demand (BOD), Chemical oxygen demand (COD), Colour, Dissolved organic carbon (DOC), Total phosphorus (TP), Total nitrogen (TN), Total organic carbon (TOC), Total suspended solids (TSS), Nitrate, Nitrite, Orthophosphate, SAC, Turbidity, UVT



Technical data Controller

Controller included in delivery: BlueBox RS

Power supply: 24 V DC

Power consumption (typical): 10 W

Aluminium housing (WxHxD): 330 mm x 220 mm x 93 mm, IP 65

Weight: ca. 3.3 kg

Memory: 8 GB

Colour Touch Panel: 7"

Ambient temperature: -20 to +45 °C

Available languages of the operating system: English and German, others on request.

Interfaces:

1x RS232/RS485 (with 12V, 6W power) as interface or for the connection of sensors

1x CAN Bus

1x Ethernet 10/100MBit

1x Pulse input (PNP/NPN selectable)

1x Slot for freely selectable BlueConnect Sensor or I/O card

(e.g. analogue pH or 2x 4-20 mA output)

1x connection (4 mm) for compressed air cleaning

GPRS/UMTS/LTE/4G Modem (selectable option)

WIFI (selectable option)

Technical data ISA Spectrometer

The ISA spectrometer is connected to the spectrometer module or BlueBox via optical fiber.

Measuring principle: UV/Vis spectrum in the range from 200 - 720 nm

resolution: 256 pixels

Measuring interval min.: 3 seconds

Light source: xenon flash light

Integrated solenoid valve for automatic compressed air cleaning of the optical windows

Access to all absorption spectra and all raw spectra

Sensor head:

Material: stainless steel (1.4404), optionally titanium

Dimensions: Length: approx. 230 mm (depending on the measuring gap), diameter: 44 mm

Weight: approx. 1.5 kg

Temperature range: 0 °C ... +110 °C

Protection class: IP68, ATEX category 3 (optional category 2)

Optical path length freely adjustable between 0.5 and 20 mm

Length of fibre optic cable & material: selectable option

Grundpreis ISA – UV/Vis Spektrometer System

Article number: 486 00RS-ISA-Option1-UV-Option2

Pos.	Option 1: Length of fibre optic cable & material	Art. no.
1	2.5 m, V4A	-2V
2	6 m, V4A	-6V
3	10 m, V4A	-10V
4	2.5 m, Titanium	-2T
5	6 m, Titanium	-6T
6	10 m, Titanium	-10T

Pos.	Option 2: additional interfaces	Art. no.
7	without LTE Modem & WIFI	-/
8	with LTE Modem	-LTE
9	with WIFI	-WIF
10	with LTE Modem & WIFI	-LnW

Example configuration art. no. **486 0060-ISA-2V-UV-/**

BlueBox R1 Controller

Article number
486 00R1

The BlueBox R1 Controller is a modular and expandable base for monitoring and control tasks of all dimensions.

It allows the management of extensive sensor and actuator networks. With the help of the BlueBox as a central interface, the integration and connection of further systems can easily be accomplished. A connection via internet or mobile networks facilitates the transmission of measurement data and results at any time and allows for remote access and control of the system.



Technical data Controller

Power supply: 24 V DC

Power consumption (typical): 5 W

Aluminium housing (WxHxD): 330 mm x 220 mm x 93 mm, IP 65

Weight: ca. 3.3 kg

Memory: 8 GB

Colour Touch Display: 7"

Ambient temperature: -20 to +45 °C

Available language on display: English and German, more on request.

Including virtual sensors for the calculation of own formulas (mean values, 24-h-values, advanced formulas, ...).

Number of virtual sensors: selectable option

PLC functionality included

Interfaces:

1x RS232/RS485 (with power supply 12V, 6W) as interface or connection of sensors with RS-232/RS-485 port

1x CAN Bus

1x Ethernet 10/100MBit

1x USB

4x Slots for a freely selectable BlueConnect Sensor or I/O Cards (e.g. analogue pH or 2x 4-20 mA Output) (selectable option)

GPRS/UMTS/LTE/4G Modem (selectable option)

WIFI (selectable Option)

BlueBox R1 Controller

Article number: 486 00R1-Option1-Option2-Option3-/

Pos.	Option 1: Expansion with 4 Slots	Art. no.
1	without BlueConnect Plus card	-/
2	with BlueConnect Plus card	-BCP

Pos.	Option 2: Number of virtual sensors	Art. no.
3	10	-10
4	25	-25
5	50	-50
6	100	-100

Pos.	Option 3: additional interfaces	Art. no.
7	without LTE Modem & WIFI	-/
8	with LTE Modem	-LTE
9	with WIFI	-WIF
10	with LTE Modem & WIFI	-LnW

Example configuration Art. no. **486 00R1-BCP-10-LTE-/**

BlueBox Panel

Article number
486 00P0

The BlueBox Panel Controller is a modular and expandable base for projects of all dimensions.

The controller allows the management of extensive sensor and actuator networks.

The design allows an easy integration into a housing of your choice.



Technical data Controller

Power supply: 24 V DC

Power consumption (typical): 5 W

Aluminium housing (WxHxD): 330 mm x 220 mm x 93 mm, IP 65

Weight: ca. 3.3 kg

Memory: 8 GB

Colour Touch Display: 7"

Ambient temperature: -20 to +45 °C

Available language on display: English or German, more on request.

Including virtual sensors for the calculation of own formulas (mean values, 24-h-values, advanced formulas, ...).

Number of virtual sensors: selectable option

PLC functionality included

Interfaces:

1x RS232/RS485 (with power supply 12V, 6W) as interface or connection of sensors with RS-232/RS-485 port

1x Relay

1x CAN Bus

1x Ethernet 10/100MBit

2x USB

GPRS/UMTS/LTE/4G Modem (selectable option)

WIFI (selectable Option)

BlueBox Panel

Article number: 486 00P0-BB-Option1-Option2-/

Pos.	Option 1: Number of virtual sensors	Art. no.
1	10	-10
2	25	-25
3	50	-50
4	100	-100

Pos.	Option 2: additional interfaces	Art. no.
5	without LTE Modem & WIFI	-/
6	with LTE Modem	-LTE
7	with WIFI	-WIF
8	with LTE Modem & WIFI	-LnW

Example configuration Art. no. **486 00P0-BB-10-LTE-/**

BlueSense transducer

Article number

485 0001

The BlueSense transducer facilitates the processing and calculation of measurement values of physical and chemical sensors. In addition, the transducer features a full controller function that can cover all process-oriented tasks.

The BlueSense transducer is compatible with analogue and digital sensors and actuators of all manufacturers.



Technical data BlueSense

The BlueSense can be equipped with up to 4 input cards, of which a maximum of 2 are available for the integration of sensors.

Input card 1:

Integration of a sensor: selectable option

Input card 2:

Integration of a sensor: selectable option

Input card 3:

Additional interface: selectable option

Input card 4:

Power supply: selectable option

Inputs:

2x digital input (static), potential-free contacts

2x pulse input PNP / NPN selectable (optional: static)

Outputs:

2x current outputs 4-20 mA

2x relay, potential-free contacts, 230 VAC, 2A

2x relay, potential-free closing contacts, signal contact

Housing:

Material: Polycarbonate, IP65

Dimensions (LxWxH): 235 mm x 119 mm x 185 mm

Weight: 1,35 kg

Temperature range: -10 °C ... +50 °C

LCD touch screen display: 240x128 pixels

Installation: wall mounting or top-hat rail

Available languages of the operating system: English, German, French and Spanish, others on request

Selectable option

Pos.	Input card 1	Art. no.
------	--------------	----------

1	without input card	/
2	Galvanic oxygen sensor	4
4	Optical oxygen sensor	4op
5	pH electrode	5
6	ISE electrode	70
7	Redox/ ORP	9
8	4-20 mA	B
9	Chlorine sensor	CS4
10	Modbus GO for BlueTrace, BlueEC and Turbidity sensor in flow through armature	MOD

Pos.	Input card 2	Art. no.
11	without input card	-/
12	Galvanic oxygen sensor	-4
13	Optical oxygen sensor	-4op
14	pH electrode	-5
15	ISE electrode	-70
16	Redox/ ORP	-9
17	4-20 mA	-B
18	Chlorine sensor	-CS4
19	Modbus GO for BlueTrace, BlueEC and Turbidity sensor in flow through armature	-MOD

Pos.	Additional interface	Art. no.
20	without additional interface	-/
21	RS-232	-232
22	RS-485, protocol 9600 Baud, Modbus protocol	-485
23	CAN bus for the connection to the BlueBox System	-CAN
24	Profibus DP	-PRO

Pos.	Power supply	Art. no.
25	12 VDC (9V - 18V) ca. 8W	-12

26	24 VDC (18V - 36V) ca. 8W	-24
27	230 VAC (90V - 260V) ca. 8W	-230

Mobile UV/Vis Spectrometer System

Article number
486 0M60

The mobile UV/Vis spectrometer system is a complete measurement system that combines the functions of a UV/Vis spectrometer and a BlueBox in one robust case. Additional built-in rechargeable batteries and a battery management system allow the mobile UV/Vis spectrometer to operate autonomously for several days without power supply.

Available parameters

The ISA UV/Vis spectrometer is always calibrated on site using laboratory values. This customer-specific calibration ensures high measurement accuracy and the selection of the correct wavelengths. The system can be calibrated to the following parameters:

Ammonium, Biochemical oxygen demand (BOD), Chemical oxygen demand (COD), Colour, Dissolved organic carbon (DOC), Total phosphorus (TP), Total nitrogen (TN), Total organic carbon (TOC), Total suspended solids (TSS), Nitrate, Nitrite, Orthophosphate, SAC, Turbidity, UVT



Technical data Controller

Controller included in delivery: BlueBox TS

Touch Panel, LCD colour display with 480x272 pixels and 65,536 colours

Aluminium housing (LxWxH): 280 mm x 90 mm x 170 mm, IP 65

Colour: blue (RAL 5010, powder-coated)

Weight: 2,9 kg

Ambient temperature: -10 °C ... +50 °C

Operating temperature range: -20 °C ... +45 °C

Power supply: 24 V DC, 3.2 A

Build: selectable option

Available as SAC or full UV/Vis spectral analyser

Available languages of the operating system: English, German, French and Spanish, others on request

Memory size: selectable option

Number of virtual sensors: selectable option

With the virtual sensors further parameters and calculations can be carried out directly on the BlueBox

Interfaces:

1x serial interface (example protocols: RS232/RS485 (Modbus RTU), IEC 60870-5-104; for others see protocol list)

1x CAN bus

1x Ethernet 10/100MBit

2x pulse input

2x current output 4-20mA

2x relay 48V AC/DC 0.5A

1x 12V 6W integrated power supply for sensors/modules with RS232/485

Technical data ISA Spectrometer

The ISA spectrometer is connected to the spectrometer module or BlueBox via optical fiber.

Measuring principle: UV/Vis spectrum in the range from 200 - 720 nm
 resolution: 256 pixels
 Measuring interval min.: 3 seconds
 Light source: xenon flash light
 integrated solenoid valve for automatic compressed air cleaning of the optical windows
 Access to all absorption spectra and all raw spectra

Sensor head:

Material: stainless steel (1.4404), optionally titanium
 Dimensions: Length: approx. 230 mm (depending on the measuring gap), diameter: 44 mm
 Weight: approx. 1,5 kg
 Temperature range: 0 °C ... +110 °C
 Protection class: IP68, ATEX category 3 (optional category 2)
 Optical path length freely adjustable between 0.5 and 20 mm

Length of fibre optic cable: selectable option

Technical data case

Dimensions (LxWxH): 590 mm x 390 mm x 215 mm
 Colour: black Material: HPX® resin
 Waterproof, dustproof and break-proof (when closed)
 Two push & pull locks, suitable for padlocks
 Double-layer, soft-grip handles and strong hinges
 Pressure compensation valve, operation according to IP65

Battery power: 14Ah, weight: 5,6 kg

(charger is included in the scope of delivery)
 Temperature range: -10 °C ... +45 °C
 Total weight (case, BlueBox, battery): 19 kg

Selectable options

Pos.	Build	Art. no.
1	SAC	SAK
2	UV/Vis	UV

Pos.	Memory size	Art. no.
3	512 MB	-512
4	2GB	-2G

Pos.	Number of virtual sensors	Art. no.
5	10	-10
6	20	-20
7	50	-50
8	100	-100

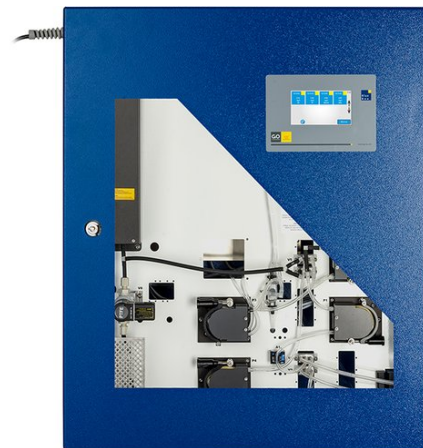
Pos.	UMTS modem	Art. no.
9	Without UMTS modem	-I
10	UMTS modem with 5 m cable for antenna	-U

Example configuration Art. no. 486 0M60-**UV-512-10-I**

BlueMon Ammonium

Article number
488 2FA0

Fully automatic on-line analyser for measuring concentrations of ammonium in fluids according to wet chemical methods.
The photometer ammonium version of the BlueMon system comprises of the following equipment: analyser unit and control and measurement electronics in a powder-coated cabinet.



Technical data BlueMon Ammonium

Method: photometric measurement according to DIN 38406-5 (Indophenol blue method)

Measuring range: selectable option

Accuracy: $\pm 3\%$ of full scale

Number of sample channels: selectable option

Sample conditions:

Sample pressure: 0 bar (max 0.05 bar overpressure)

Sample temperature: 10 °C ... 35 °C

Sample flow rate: 2 ... 10 l/h, no suspended solids

Samples with particle size > 30 microns need filtration

Housing:

Protection classification: IP54 (optional IP65)

Dimensions: (LxWxH): 600 mm x 300 mm x 700 mm

Cabinet material: aluminium (powder-coated in blue)

Power consumption (average): 45W

Interfaces:

1x Ethernet TCP/IP (incl. Modbus)

1x Serial Interface (example protocols: RS232/RS485 (Modbus RTU), IEC 60870-5-104; further more, see protocol list)

1x CAN bus (for connecting further BlueBox System modules for sensors and actuators)

2x current output 4 - 20mA

4x digital output

Additional interfaces: selectable option

Additional connectable sensors:

1x connector for pH glass electrode

1x connector for temperature (PT1000)

1x connector redox electrode

1x current input 4 - 20mA

2x digital in

1x leakage sensor

2x bubble detector for sample reagent

Automatic cleaning: selectable option

Pos.	Measuring range	Accuracy	Art. no.
1	0-0,5 mg/l NH ₄	3%	0,5
2	0-1 mg/l NH ₄	3%	1
3	0-8 mg/l NH ₄	3%	8
4	0-20 mg/l NH ₄ **	3%	20

** This measuring range requires a dilution of the sample

Pos.	Number of sample channels	Art. no.
5	2 channels	-C2
6	3 channels	-C3
7	4 channels	-C4

Pos.	Additional interfaces	Art. no.
8	without	-I
9	2x 4-20 mA	-2mA
10	4x 4-20 mA	-4mA

Pos.	Automatic cleaning	Art. no.
11	without	-I
12	with automatic cleaning	-aR

BlueMon Orthophosphate

Article number
488 2FP0

Fully automatic on-line analyser for measuring concentrations of mediumsin fluids according to wet chemical methods.

The photometer orthophosphate version of the BlueMon system comprises of the following equipment: analyser unit and control and measurement electronics in a powder-coated cabinet.



Technical data BlueMon Orthophosphate

Method: photometric measurement according to DIN EN ISO 6878
(Molybdenum Blue Method)

Measuring range: selectable option

Accuracy: $\pm 3\%$ of full scale

Number of sample channels: selectable option

Sample conditions:

Sample pressure: 0 bar (max 0.05 bar overpressure)

Sample temperature: 10 °C ... 35 °C

Sample flow rate: 2 ... 10 l/h, no suspended solids

Samples with particle size > 30 microns need filtration

Housing:

Protection classification: IP54 (optional IP65)

Dimensions: (LxWxH): 600 mm x 300 mm x 700 mm

Cabinet material: aluminium (powder-coated in blue)

Power consumption (average): 45W

Interfaces:

1x Ethernet TCP/IP (incl. Modbus)

1x Serial Interface (example protocols: RS232/RS485 (Modbus RTU), IEC 60870-5-104; further more, see protocol list)

1x CAN bus (for connecting further BlueBox System modules for sensors and actuators)

2x current output 4 - 20mA

4x digital output

Additional interfaces: selectable option

Additional connectable sensors:

1x connector for pH glass electrode

1x connector for temperature (PT1000)

1x connector redox electrode

1x current input 4 - 20mA

2x digital in

1x leakage sensor

2x bubble detector for sample reagent

Additional automatic cleaning: selectable option

Pos.	Measuring range	Accuracy	Art. no.
1	0,0 - 1 mg/l Orthophosphate	3%	-1
2	0,0 - 6 mg/l Orthophosphate	3%	-6
3	0,0 - 10 mg/l Orthophosphate	3%	-10
4	0,0 - 20 mg/l Orthophosphate**	3%	-20

**Measuring range requires dilution

Pos.	Number of sample channels	Art. no.
5	2 channels	-C2
6	3 channels	-C3
7	4 channels	-C4

Pos.	Additional interfaces	Art. no.
8	Without	-I
9	2x 4-20 mA	-2mA
10	4x 4-20 mA	-4mA

Pos.	Automatic cleaning	Art. no.
11	Without	-I
12	With automatic cleaning	-aR

Example configuration Art. no. 488 2FP0-1-C2-I

BlueMon Orthophosphate & Total Phosphorus

Article number
488 2FP1

Fully automatic on-line analyser for measuring concentrations of mediums in fluids according to wet-chemical methods.
The photometer phosphate version of the BlueMon system comprises of the following equipment: analyser unit and control and measurement electronics in a powder-coated cabinet.

Technical data BlueMon Orthophosphate and Total Phosphorus

Method: photometric measurement according to DIN EN ISO 6878
(Molybdenum Blue Method)

Measuring range: selectable option

Accuracy: $\pm 3\%$ of full scale

Number of sample channels: selectable option

Sample conditions:

Sample pressure: 0 bar (max 0.05 bar overpressure)

Sample temperature: 10 °C ... 35 °C

Sample flow rate: 2 ... 10 l/h, no suspended solids

Samples with particle size > 30 microns need filtration

Housing:

Protection classification: IP54 (optional IP65)

Dimensions: (LxWxH): 600 mm x 300 mm x 700 mm

Cabinet material: aluminium (powder-coated in blue)

Power consumption (average): 45W

Interfaces:

1x Ethernet TCP/IP (incl. Modbus)

1x Serial Interface (example protocols: RS232/RS485 (Modbus RTU), IEC 60870-5-104; further more, see protocol list)

1x CAN bus (for connecting further BlueBox System modules for sensors and actuators)

2x current output 4 - 20mA

4x digital output

Additional interfaces: selectable option

Additional connectable sensors:

1x connector for pH glass electrode

1x connector for temperature (PT1000)

1x connector redox electrode

1x current input 4 - 20mA

2x digital in

1x leakage sensor

2x bubble detector for sample reagent

Additional automatic cleaning: selectable option



Pos.	Measuring range	Accuracy	Art. no.
1	0-1 mg/l PO ₄ -P & TP	3%	1
2	0-2 mg/l PO ₄ -P & TP	3%	2
3	0-6 mg/l PO ₄ -P & TP	3%	6
4	0-20 mg/l PO ₄ -P & TP**	3%	20
5	0-30 mg/l PO ₄ -P & TP**	3%	30

**requires dilution of the sample

Pos.	Number of sample channels	Art. no.
6	2 channels	-C2
7	3 channels	-C3
8	4 channels	-C4

Pos.	Additional interfaces	Art. no.
9	Without	-I
10	2x 4-20 mA	-2mA
11	4x 4-20 mA	-4mA

Pos.	Automatic cleaning	Art. no.
12	Without	-I
13	With automatic cleaning	-aR

BlueMon Total Nitrogen & Total Phosphorus

Article number
488 2TPN

Fully automatic on-line analyser for measuring concentrations of mediums in fluids according to wet-chemical methods.
The photometer total nitrogen & total phosphorus version of the BlueMon system comprises of the following equipment: analyser unit and control and measurement electronics in a powder-coated cabinet.

Technical data BlueMon Total Nitrogen & Total Phosphorus

Method: photometric measurement according to DIN EN ISO 6878 (Molybdenum Blue Method) and DIN EN ISO 11905

Measuring range: selectable option

Accuracy: $\pm 3\%$ (Total Phosphorus), $\pm 5\%$ (Total Nitrogen) of full scale

Number of sample channels: selectable option

Sample conditions:

Sample pressure: 0 bar (max 0.05 bar overpressure)

Sample temperature: 10 °C ... 35 °C

Sample flow rate: 2 ... 10 l/h, no suspended solids

Samples with particle size > 30 microns need filtration

Housing:

Protection classification: IP54 (optional IP65)

Dimensions: (LxWxH): 600 mm x 300 mm x 700 mm

Cabinet material: aluminium (powder-coated in blue)

Power consumption (average): 45W

Interfaces:

1x Ethernet TCP/IP (incl. Modbus)

1x Serial Interface (example protocols: RS232/RS485 (Modbus RTU), IEC 60870-5-104; further more, see protocol list)

1x CAN bus (for connecting further BlueBox System modules for sensors and actuators)

2x current output 4 - 20mA

4x digital output

Additional interfaces: selectable option

Additional connectable sensors:

1x connector for pH glass electrode

1x connector for temperature (PT1000)

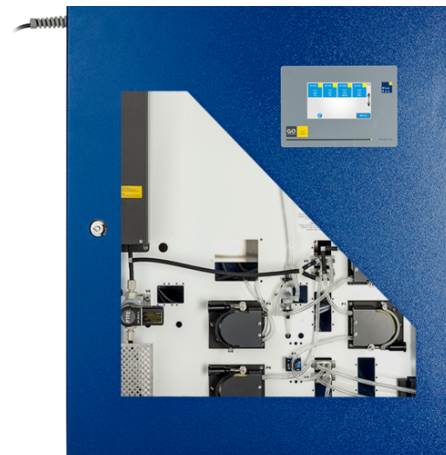
1x connector redox electrode

1x current input 4 - 20mA

2x digital in

1x leakage sensor

2x bubble detector for sample reagent



Pos.	Measuring range	Art. no.
1	Total nitrogen up to 6 mg/l Total phosphorus up to 1 mg/l	2
2	Total nitrogen up to 100 mg/l** Total phosphorus up to 20 mg/l**	1

**requires dilution of the sample

Pos.	Number of sample channels	Art. no.
3	2 channels	-/

Pos.	Additional interfaces	Art. no.
4	Without	-/
5	2x 4-20 mA	-2mA
6	4x 4-20 mA	-4mA

BlueScan Plus - UV/Vis Spectrometer

Article number
461 6600

The BlueScan Plus UV/Vis Spectrometer is capable of simultaneously detecting multiple parameters. The utilization of chemometric methods allows for the measurement and comprehensive analysis of a multitude of water properties, contained suspended solids, as well as dissolved substances. To achieve this, the evaluation encompasses the entire absorption spectrum ranging from the UV until the near-infrared range (200-720 nm).



Available parameters

The BlueScan Plus UV/Vis spectrometer is always calibrated on site using laboratory values. This customer-specific calibration ensures high measurement accuracy and the selection of the correct wavelengths. The system can be calibrated to the following parameters: Ammonium, Biochemical oxygen demand (BOD), Chemical oxygen demand (COD), Colour, Dissolved organic carbon (DOC), Total phosphorus (TP), Total nitrogen (TN), Total organic carbon (TOC), Total suspended solids (TSS), Nitrate, Nitrite, Orthophosphate, SAC, Turbidity, UVT

Technical Data

System: UV/Vis spectrum 200 - 720 nm
Measuring principle: Spectral analysis
Optical measuring path length: 1 - 30 mm (adjustable in discrete steps)
Measuring interval: ≥ 3 s
Light source: Xenon pulse light

Design: selectable Option

Material: selectable option

Dimensions: Length 650 mm; $\varnothing$ 86 mm
Weight: approx. 6 kg
IP-Schutzart: IP 68
Pressure range: 0 - 10 bar
Operation temperature range: -5 to +45 °C

Interfaces

1x CAN bus for connection to the BlueBox system
1x CAN bus for connection of the Multi Sensor Head (MSH) probe head [optional]
1x Modbus
[RTU] for connection to a PLC or integration into third-party systems

Parameters

UV/Vis detectable Parameters
Pressure / Level: 0 - 10 bar / 0 - 100 m

Temperature: 0 - 60 °C

Selectable options

Pos.	Design	Art. no.
1	without extension plug	-I
2	with extension plug for connection of MSH	-ES

Pos.	Material	Art. no.
3	Stainless steel 1.4404	-V
4	Titanium	-T

Configuration example Art. no. **461 6600-I-V**

ISA - UV/Vis Spectrometer Module

Article number
486 6000

The ISA - UV/Vis Spectrometer Module is a compact UV/Vis spectrometer that allows the simultaneous determination of a variety of parameters, such as COD, Nitrate, TOC, TSS, BOD & DOC with one optical sensor.

The ISA - UV/Vis Spectrometer Module is designed to expand an existing spectrometer system or to realize a decentralized placement of BlueBox controller and spectrometer. In the module version, the sensor head is connected via an optical fiber to the electronic module, which can be connected via CAN bus to a controller from the BlueBox system.



Available parameters

The ISA UV/Vis spectrometer is always calibrated on-site using laboratory values. This customer-specific calibration ensures high measurement accuracy and the selection of the correct wavelengths. The system can be calibrated to the following parameters:

Ammonium, Biochemical oxygen demand (BOD), Chemical oxygen demand (COD), Colour, Dissolved organic carbon (DOC), Total phosphorus (TP), Total nitrogen (TN), Total organic carbon (TOC), Total suspended solids (TSS), Nitrate, Nitrite, Orthophosphate, SAC, Turbidity, UVT

Technical data ISA - UV/Vis Spectrometer Module

The ISA spectrometer is connected to the spectrometer module or BlueBox via optical fiber.

Measuring principle: UV/Vis spectrum in the range from 200 - 720 nm

resolution: 256 pixels

Measuring interval min.: 3 seconds

Light source: xenon flash light

integrated solenoid valve for automatic compressed air cleaning of the optical windows

Access to all absorption spectra and all raw spectra

Sensor head:

Material: stainless steel (1.4404), optionally titanium

Dimensions: Length: approx. 230 mm (depending on the measuring gap), diameter: 44 mm

Weight: approx. 1.5 kg

Temperature range: 0 °C ... +110 °C

Protection class: IP68, ATEX category 3 (optional category 2)

Optical path length freely adjustable between 0.5 and 20 mm

Length of fibre optic cable & material: selectable option

Design: selectable option

Module

Power supply: 24 V DC

Power consumption (typical): 10 W

Aluminium housing (WxHxD): 330 mm x 220 mm x 93 mm, IP 65

Weight: ca. 3.0 kg

Ambient temperature: -20 to +45 °C

Interfaces:

- 1x Pulse input (PNP/NPN selectable)
- 1x Slot for freely selectable BlueConnect Sensor or I/O card (e.g. analogue pH or 2x 4-20 mA output)
- 1x connection (4 mm) for compressed air cleaning

Grundpreis ISA – UV/Vis Spektrometer System

Article number: 486 6000-ISA-Option1-UV-Option2

Pos.	Option 1: Length of fibre optic cable & material	Art. no.
1	2.5 m, V4A	-2V
2	6 m, V4A	-6V
3	10 m, V4A	-10V
4	2.5 m, Titanium	-2T
5	6 m, Titanium	-6T
6	10 m, Titanium	-10T

Pos.	Option 2: Design	Art. no.
7	SingleBeam	-SB
8	DualBeam	-DB

Example configuration art. no. **486 6000-ISA-2V-UV-SB**

BlueConnect Sensor Module

Article number
486 CS00

The BlueConnect sensor module enables the conversion of analogue sensors into the digital world. In addition to the simple connection of sensors to the BlueBox system via CAN bus, sensors can also be integrated directly into a PLC via Modbus. The necessary protocol is freely available and all necessary settings can be configured via the associated free of charge PC software.



Interfaces

1x CAN bus (Protocol GO Systemelektronik)

Selectable Option: 1x Modbus (Protocol GO Systemelektronik, freely available)

Sensor elements are not included in the scope of delivery.

Technical Data

Power Supply: 10 - 36 V DC

Power consumption module (typical): 1 W

Total power consumption depends on the connected sensor.

Dimensions: 124 x 115 x 63 mm

Weight: 0.35 kg

IP protection class: IP 66

Ambient temperature: -10 °C to +45 °C

Selectable option

Pos.	Variant	Art. no.
1	Analogue pH with/without Temperature (PT1000)	5
2	Analogue ISE (e.g. NH4 or NO3)	7
3	Analogue Redox (ORP)	9
4	Galvanic Oxygen [GO]	4
5	Modbus [GO]*	MOD

Pos.	Additional Interface	Art. no.
6	without Modbus	-/
7	with Modbus	-MOD

*BlueEC, BlueTrace,
Optical Oxygen Sensor

Configuration example Art. no. 486 CS00-5-/

BlueConnect I/O Module

Article number
486 CI00

The BlueConnect I/O Module offers a modular approach on the expansion of the input and output interface capabilities of the BlueBox System. In addition to the integration of data, BlueConnect I/O Modules can be used to output data to external PLCs or to perform the control tasks such as switching valves or pumps. The control task is realized via the PLC functionality of a controller of the BlueBox system.



Interfaces

1x CAN bus (Protocol GO Systemelektronik)

Selectable option: 1x Modbus (Protocol GO Systemelektronik, freely available)

1x Selected I/O variant

Technical Data

Power Supply: 10 - 36 V DC

Power consumption module (typical): 1 W

Total power consumption depends on the connected sensor.

Dimensions: 124 x 115 x 63 mm

Weight: 0.35 kg

IP protection class: IP 66

Ambient temperature: -10 °C to +45 °C

Selectable option

Pos.	Variant	Art. no.
1	2x 4-20 mA Output	AO2
2	2x Relay Output (24 VDC; 2 A)	REL
3	2x 4-20 mA Input	AI2
4	2x Pulse Input (PNP/NPN selectable)	PI2
5	Modbus RS232 (12 VDC; 6W)	S12

Pos.	Additional interface	Art. no.
6	without Modbus	-I
7	with Modbus	-MOD

Configuration example Art. no. 486 CI00-**AO2-I**

BlueConnect Plus Module

Article number
486 CP00

In addition to the integration of additional sensors, the BlueConnect Plus Module also enables the expansion of the input and output interfaces of the BlueBox system.

A BlueConnect Plus Module can not only integrate data into a BlueBox System but can also acts as an output for example to an external PLC. In addition, control tasks such as switching valves or pumps can also be performed using the BlueConnect Plus Module in combination with a controller from the BlueBox System.



Interfaces

1x CAN bus (Protocol GO Systemelektronik)
4x Slots for freely selectable sensor or I/O cards

Sensor elements are not included in the scope of delivery.

Technical Data

Power Supply: 10 - 36 V DC
Power consumption module (typical): 1 to 4 W
Total power consumption depends on the configuration and the connected components.
Dimensions: 330 x 220 x 93 mm
Weight: approx. 2.2 kg
IP protection class: IP 66
Ambient temperature: -10 °C to +45 °C

Selectable option

Pos.	Sensor or I/O cards (up to 4 selectable)	Art. no.
1	Analogue pH with/without Temperature (PT1000)	5
2	Analogue ISE (e.g. NH ₄ or NO ₃)	7
3	Analogue Redox (ORP)	9
4	Galvanic Oxygen [GO]	4
5	Modbus [GO]*	MOD
6	2x 4-20 mA Output	AO2
7	2x Relay Output (24 VDC; 2 A)	REL
8	2x 4-20 mA Input	AI2
9	2x Pulse Input (PNP/NPN selectable)	PI2
10	Modbus RS232 (12 VDC; 6 W)	S12

*BlueEC, BlueTrace, Optical Oxygen Sensor

The different cards can be freely selected.

If a slot is not to be used, the slot must be indicated with -/.

A BlueConnect Plus without cards therefore has the article number: 486 CP00-/-/-/-/

Configuration example Art. no. 486 CP00-**5-AO2-MOD-REL**

Modbus / USB Converter

Article number
486 S810

Module for configuration and calibration of GO Systemelektronik Modbus sensors.
With integrated power supply for sensors and male USB plug for connection to PC.

Aluminium housing: 120 mm x 85 mm x 60 mm
IP rating: IP 66
Weight: approx. 0.35 kg
with USB plug and earth connection



BlueTrace - Oil in Water Sensor

Article number
461 6200

The BlueTrace - Oil in Water Sensor is a compact fluorescence probe for the measurement of BTEX, PAH and refined oil in water. The robust design of the BlueTrace Sensor allows for applications in harsh conditions, such as corrosive media or at high pressure.



Technical data

Measuring principle: fluorescence
Light source: < 300 nm
Emission wavelength: 280 nm
Detection of fluorescence: 300 - 400 nm

Measuring ranges (typical): 0 - 30/100/300 ppm
The exact measuring range depends on the oil type and the ambient conditions
Measuring accuracy (typical): 3 % FS
Detection limit (typical): 0.1 ppm
Measuring interval: >= 1 s

Interface: Modbus

[RTU]

Input voltage: 10 - 32 VDC
Power draw: max 500 mW

Sensor head:

Material: selectable option

Dimensions (length excludes connector): l: 146.1 mm, d: 36 mm
Weight: 600 g
Working temperature range: -5 °C ... +55 °C

Cable length: selectable option

Selectable options

Pos.	Cable length	Art. no.
1	5 m	5
2	10 m	10
3	20 m	20

Pos.	Material	Art. no.
4	stainless steel 1.4404	-VA
5	titanium	-Tit

Example configuration Art. no. 461 6200-M-**5-VA**

BlueTrace - Turbidity Sensor

Article number
461 6780

The BlueTrace - Turbidity Sensor is a compact probe for the measurement of Turbidity, Total Suspended Solids (TSS) and Temperature in water. The sensor employs the scattered light measurement principle and features an integrated temperature compensation. The Modbus interface allows for an easy integration.



Technical data

Measuring principle: 90° scattered light
Wavelength: 860 nm

Measuring range: selectable option

Measuring accuracy: 3 % FS
Detection limit: 0.1 ppm
Measuring interval: ≥ 1 s
Measuring range TSS: customer-specific factor based on turbidity
Measuring range temperature: 0-60 °C

Interface: Modbus

[RTU]

Input voltage: 10 - 32 VDC

Power consumption: max 500 mW

Housing:

Material: selectable option

Dimensions (length without connection): length: 146.1 mm, diameter: 36 mm

Weight: 800 g

Temperature range: -5 °C ... +55 °C

Cable length: selectable option

Selectable options

Pos.	Measuring range	Art. no.
1	0-50 FNU	50
2	0-100 FNU	100
3	0-1000 FNU	1000
4	0-4000 FNU	4000

Pos.	Cable length	Art. no.
5	5 m	-5
6	10 m	-10
7	20 m	-20
8	25 m	-25

Pos.	Material	Art. no.
9	Stainless steel 1.4404	-VA
10	Titanium	-Tit

Configuration example art. no. 461 6780-**50-5-VA**

Multi Sensor Head - MSH

Article number
461 MSH0

The Multi Sensor Head (MSH) is a modular sonde that allows the integration of up to four sensors or electrodes in one submersible probe head. As one possible configuration, conductivity, temperature, redox, pH and oxygen can be determined with one MSH.

The integrated electronics allow the direct digitalization of analogue sensors. The MSH can alternatively be integrated into the BlueBox system via CAN bus or into a PLC via Modbus. The necessary protocol and PC configuration program are freely available.



Parameter: selectable option

Configuration 1: Conductivity , Temperature , Salinity , Total dissolved solids (TDS) , pH , Redox (ORP) , Oxygen

Configuration 2: Ammonium , pH , Oxygen , Temperature

Configuration 3: Ammonium , Nitrate , pH , Temperature

Technical data

Design: selectable option

Spannungsversorgung: 10 - 36 V DC

Leistungsaufnahme (typisch): 4 W

Material: selectable option

Dimensions: Length 465 mm; Ø 86 mm

Weight: approx. 4 kg

IP protection class: IP 68

Pressure range: 0 - 6 bar

Operating temperature range: -5 to +45 °C

Interfaces

CAN bus

Modbus

[RTU]

Selectable options

Pos.	Parameter	Art. no.
1	Conductivity Temperature Salinity Total Dissolved Solids (TDS) pH Redox (ORP) Dissolved Oxygen	LORp
2	Ammonium pH Dissolved Oxygen Temperature	NOp
3	Ammonium Nitrate pH Temperature	pNHO

Pos.	Design	Art. no.
4	Without extension plug	-I
5	With extension plug for connection of MSH or BlueScan Plus	-ES

Pos.	Material	Art. no.
6	Stainless steel 1.4404	-V
7	Titanium	-T

Configuration example Art. no. **461 MSH0-LORp-I-V**

BlueEC Inductive Conductivity Sensor

Article number
461 2092

The BlueEC Conductivity Sensor works on basis of the inductive measurement principle and features an integrated temperature measurement. In addition, the digital sensor is capable of simultaneously calculating the salinity and TDS content. The sensor can directly be connected to all controller units of the BlueBox System via the digital Modbus interface.



The following parameters are measured:

1. Conductivity
2. Temperature
3. Temperature compensated conductivity
4. Salinity (calculated according to UNSECO formula)
5. TDS (calculated)

Technical data

Version: selectable option

Cable length: selectable option

Conductivity:

Measurement principle: inductive cell with compensation

Measurement range: selectable option

Accuracy: 3% FS

Rate: ≥ 1 sec.

Temperature:

Measurement principle: NTC

Measurement range: 0 °C ... 80 °C

Accuracy: $\pm 0,5$ °C

Resolution: 0,1 °C

Rate: < 60 sec.

Material: PVDF

Dimensions: Length approx. 160 mm

Diameter: 30 mm

Interface: Modbus RS485

Selectable options

Pos.	Version	Art. no.
1	Submersible version (in-situ)	T
2	Flow-through version (pipe)	R

Pos.	Cable length	Art. no.
3	5 m	-5
4	10 m	-10
5	15 m	-15
6	25 m	-25
7	100 m	-100

Pos.	Measuring range	Art. no.
8	40 - 3000 μ S/cm	-1
9	0 - 120 mS/cm	-2

Configuration example Art. no. 461 2092-**T-10-1**

Galvanic oxygen sensor

Article number
461 4000

Submersible sensor for the measurement of dissolved oxygen and temperature. The galvanic sensor is characterized by a faster response time, higher measuring accuracy in the lower range as well as the lower purchase price.



Oxygen sensor:
Measuring principle: galvanic cell
Measuring range: 0 ... 20 mg/l
Accuracy: +/- 0,2 mg/l
Resolution: 0,1 mg/l
Interval: >= 1 sec
Temperature range: 0 °C ... +50 °C
Durability: typically 12 to 24 months
integrated temperature measurement and compensation

Sensor housing:
Material: metal

protective housing included in the delivery:
Material: PVC, black
Dimensions: l: 80 mm, d: 60 mm

Cable length: selectable option

Selectable options

Pos.	Cable length	Art. no.
1	5 m	5
2	10 m	10
3	15 m	15
4	20 m	20
5	25 m	25
6	50 m	50

Example configuration Art. no. 461 4000-5

Optical oxygen sensor

Article number
461 4610

With the optical oxygen sensor the oxygen content in the water can be determined. An advantage of the optical oxygen sensor is the low maintenance and low calibration continuous operation.

Technical data:

Measuring principle: Luminescence

Measuring range: 0.00 ... 20.00mg/L / 0.0 ...200% SAT adjustable

Accuracy: +- 1%

Response time (t90): < 60 s

Operating voltage: 10 - 30 VDC

Interface: Modbus RS-485

Pressure: 5 bar

Protection class: IP68

Cable included in delivery: 5 m (other lengths on request)



pH Electrode - Process

Article number
461 5109

The pH electrode process with a PTFE diaphragm for the reliable determination of the pH value is particularly suitable for use under high pressure or in media with high solid/suspended matter content.

Application areas:

- ? Waste water
- ? Process measurement- and control
- ? Water with high solids content
- ? Environmental monitoring
- ? Drinking water

Optionally, the electrode is available with an integrated temperature sensor.



Technical Data

Measuring principle: Glass electrode

Measuring range: pH 0 to pH 14

Measuring resolution: 0.01

Measuring interval: ≥ 1 s

Ambient pressure: max. 10 bar at 20 °C

Probe conductivity: $> 150 \text{ } \mu\text{S/cm}$

Temperature range: -5 °C to 70 °C

Diaphragm: PTFE

Shaft material: Glass

Shaft length: 120 mm

Shaft diameter: 12 mm

Electrode Material: AH glass ball

Reference system: Ag / AgCl / Tepox Gel

Mounting thread: PG13.5

Cable connector: S8 plug 2 poles (without temperature),
Variopin (with temperature)

Required cable: Art. no. 439 0501 (without Temperature),
Art. no. 439 0516 (with Temperature)

Design: selectable option

Selectable options

Pos.	Design	Art. no.
1	without temperature measurement	-/
2	with temperature measurement (PT1000)	-PT1
3	with temperature measurement (NTC30K)	-NTC

Ion-selective electrode for ammonium

Article number
461 7410

The ammonium selective electrode is a matrix membrane electrode with a fluid contact. The flexible ammonium selective membrane is made from a special ion exchanger who is dissolved in an organic solvent and embedded into a PVC matrix.

Technical data:

Parameter: NH_4^+
Measuring principle: Ion-selective Electrode
Measuring range: $1 \cdot 10^{-5} \dots 1 \text{ mol/l}$, $0,2 \dots 18.000 \text{ mg/l}$
Slope: $57 \pm 2 \text{ mV/p NH}_4^+$
Response time: $< 30 \text{ s}$ (in 180 mg/l NH_4^+ -solution)
Stability: $\pm 0,3 \text{ mV}$ (30 min), $\pm 1 \text{ mV}$ (24h)
Working temperature: $0 \dots 40^\circ\text{C}$
Max. allowed working pressure: 1 bar
pH-range: pH 3 ... pH 7
Resistance: $\sim 1 \text{ M Ohm}$

Interferences:

$\text{Ca}^{2+}/\text{NH}_4^+ = 10.000$, $\text{Mg}^{2+}/\text{NH}_4^+ = 10.000$, $\text{Na}^+/\text{NH}_4^+ = 1.000$, $\text{H}^+/\text{NH}_4^+ = 100$, $\text{K}^+/\text{NH}_4^+ = 10$,
Ion/ NH_4^+ -Relation between interfering and measure ions at 10% error

Housing:

Material: plastic (black)
Dimensions: length: 145 mm, diameter: 12 mm
Immersion depth: 120 mm
Screw plug connector with PG13.5

Required cable: Art.no. 439 0501



ORP Electrode - Process

Article number
461 9009

The ORP electrode process with PTFE diaphragm for the reliable determination of the ORP value is particularly suitable for use under high pressure or in media with high solid/suspended matter content.

Application Areas

- ? Wastewater
- ? Process measurement- and control
- ? Water with high solids content
- ? Environmental monitoring
- ? Drinking water



Technische Daten

Measuring principle: Glass electrode
 Measuring range: -1500 to +1500 mV
 Measuring resolution: 0.01
 Measuring interval: ≥ 1 s
 Ambient pressure: max. 10 bar at 20 °C
 Probe conductivity: $> 150 \text{ } \mu\text{S/cm}$
 Temperature range: -5 °C to 70 °C

Diaphragm: PTFE
 Shaft material: Glass
 Shaft length: 120 mm
 Shaft diameter: 12 mm
 Electrode Material: Platinum cap
 Reference system: Ag / AgCl / Tepox Gel
 Cable connector: S8 plug 2 poles
 Mounting thread: PG13.5

Required cable: 439 0501

Retractable assembly

Article number
462 6700

The retractable assembly allows the safe removal of a sensor from a pipeline without having to interrupt the process. This means that the sensor can be serviced manually (cleaning, calibration or replacement) very easily during operation and the subsequent installation can be carried out again without any problems.

Applications: In-line process measurements

Max. Diameter (without sampling valve): 80 mm

Length: approx. 450 mm

Material: stainless steel

Max. pressure: 6 bar

Adapter: selectable option

Connection: selectable option



Selectable options

Pos.	Adapter	Art. no.
1	BlueTrace	-BT

Pos.	Connection	Art. no.
2	G 1 1/2 " male	-112

Configuration example art. no. 462 6700-**BT-112**-/-

Flow assembly for BlueTrace (stainless steel)

Article number
462 6753

Flow assembly for BlueTrace made out of stainless steel for welding to a stainless steel pipe.

Material welding body: VA 1.4404

Material screw cap: PVC-U

Dimensions: 155,4 x 71,5mm



The pipe into which the fitting is welded must be at least 90 mm.

Flow assembly for BlueTrace (PVC)

Article number
462 6754

Flow assembly for the BlueTrace made out of PVC for gluing into a T-piece.

Material: PVC-U

Dimensions: 142 x 71,5 mm

Outer diameter of the adhesive surface: 49.9 mm

The T-piece into which the fitting is glued should have a minimum diameter of 90 mm.



Measuring pot BlueTrace

Article number
462 T020

The BlueTrace measuring pot made out of PVC allows for the integration of the BlueTrace sensor into both pipe and hose lines.

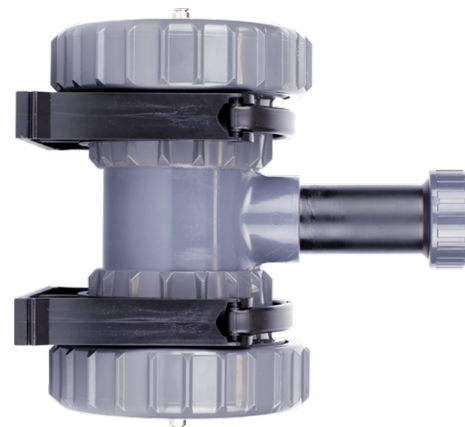
The covers of the measuring pot can be unscrewed for easy maintenance and cleaning.

Two pipe clamps are included in the scope of delivery with which the measuring pot can be easily mounted on a wall.

Material: PVC-U

Connection: selectable Option

Pipe diameter: selectable Option



selectable Option

Connection

Pipe diameter

Connection

Pos.		
1	8 mm pipe-plug connection	-
2	10mm pipe-plug connection	-
3	12 mm hose connection	-

Pipe diameter

Pos.		
4	Inner diameter 90 mm + outer diameter 110 mm	-
5	Inner diameter 110 mm + outer diameter 133 mm	-

configuration example Art. Nr. 462 T020-

*dc = discount class

Varinline® fitting for the ISA UV/Vis Spektrometer

Article number
462 6125

Armature for inline process measurements with high suspended solids content, waste water, pocket-free process measurements.
Assembly for insertion into a Varinline® housing (DN40-DN100).

The assembly consists of the following parts:
2x stainless steel flow assembly for Varinline housing®
2x screw connection stainless steel
2x sealing ring 44x7
2x O-ring 62x3
Varinline® housing: selectable option

Selectable option

Varinline®
housing



Pos.		
1	The Varinline® housing (DN40-DN100) must be provided by the customer.	-/
2	1x DN40 Varinline® housing	-DN40
3	1x DN50Varinline® housing	-DN50
4	1x DN65 Varinline® housing	-DN65
5	1x DN80 Varinline® housing	-DN80
6	1x DN100 Varinline® housing	-DN100

Configuration example Art. no. 462 6125-/

Measuring pot small

Article number
462 T010

The small measuring pot enables the accomondation of a maximum of 3 sensors for the water analysis.

Possible combinations:

- pH
- redox
- ISE
- Temperature

Maximum of 3 sensors at concurrent activity. Combinations on request.
3 x PG13,5 fitting with 2 x 14mm bore for electrodes and 1 x 12H7 hole for NTC probe
with holder and clamp DA63

Hydraulics:

- 1x inlet hose 12 mm
- 1x drain hose 12 mm

Material:

Housing PVC clear gray for visual inspection and PVC-U
Dimensions: diameter 100 mm, height 200 mm
Holder PVC white 100 x 100 x 100 mm

Number of sensor holders: selectable option



Selectable option	Sensor holder		Sensor holder
Pos.			
1	without sensor holder	-/	
2	1x sensor holder	-1	
3	2x sensor holder	-2	
4	3x sensor holder	-3	

Example configuration Art. no. 462 T010-3

ISA CALC+

Article number
420 6362



PC software for the ISA Spectrometer, to analyse the spectra and generate complete calibrations.

ISA Calc+ is an extensive software tool for analysing spectra recorded with the ISA UV/Vis Spectrometer.

It includes the basic tool ISA Calc+ with the following functions.

ISA Calc+ includes a large selection of proven statistical techniques including PLS, PCR, MLR, PCA Library and Cluster Model, enabling you to select the optimum technique for a particular analysis. The free combination of MLR and Factor Models with outlier diagnosis ensures the best possible calibration.

Using ISA Calc+ you can generate complete calibrations for the ISA UV/Vis Spectrometer, which can be used immediately to calculate the quantitative and qualitative properties of unknown samples.

ISA Calc+ functions proven statistical techniques:

Quantitative factor analysis methods:

- Principal Component Regression (PCR)
- Partial Least Squares Regression (PLSR)
- Multiple Linear Regression (MLR) with free combination search for optimum analysis results
- PCA library and cluster models for positive sample identification and qualification
- Free combination of MLR and factor models with outlier identification to generate the best possible results

Import formats:

- JCAMP *.dx, *.jdx (for converting other formats to *.dx or *.jdx with ISA Utilities)
- GRAMS Multifiles *.spc (for converting other formats to *.spc with ISA Utilities)
- Unscrambler *.una, *.uns
- Sesame Project files *.spf
- Binary *.dat

Data pre-treatment and spectrum selection:

- Standardisation
- Smoothing
- Derivatives
- Standard Normal Variate (SNV)
- Combinations of all transformation algorithms
- Filter tools for spectrum selection, e.g. by extinction value for freely selectable wavelength, outliers or attribute values

Graphic functions:

A selection of user-friendly tools is provided using the techniques of factor analysis to evaluate the primary and secondary data.

ISA Calc+ provides the following additional functions:

Up to 50 calibration models can be developed in parallel using a workflow scheme with step-by-step guidance. With its well-arranged user interface, innovative functions and scalable automation this new program provides a powerful tool for both beginners and experts.

Workflow of ISA Calc+:

1. Selection of the working series and the sample properties to be modelled creation of test and calibration data sets
2. Selection of the transformations for spectra pre-treatment
3. Configuration of regression models
4. Computation of all models

5. Display of all calibration results
6. Configuration of prediction tests
7. Display of all test results
8. Validation of selected models
9. Summary of all results

Features of ISA Calc+ include:

- Selection of transformation for spectra pre-treatment depending on variance and covariance analytical considerations
- Implementation of detrend pre-treatment as polynomial regression
- Multivariate modelling with PLS-Regression and MLR Combination Search
- Significance test for comparison of alternative models
- Automated processing is individually configured for each wizard-step
- Automated outlier removal
- Prediction with estimated measurement uncertainty
- Significance tests for bias and skew
- User administration with storage of preferential settings for all steps

For the preparation of the calculation and calibration to the desired parameters, it is necessary that for each parameter reference values (via chemical laboratory) are provided by the client.

ISA Calc+ can only be used in combination with the BlueBox PC Software.

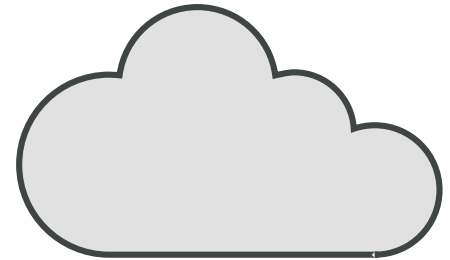
BlueGate Cloud-Service

Article number
420 6601

Over the BlueGate cloud service the measured values are available at all times over the web platform, thus BlueGate provides a powerful Industry 4.0 Lösung.

Allocation of an Internet data server with following functions:

Includes Gateway Service Art. no. 420 6606
Monthly volume for data transfer: 10 GB
Volume of data base: 2GB
Rate of transfer: max 100 MBit/sec
The data transfer is encrypted
[Secure Sockets Layer (SSL)]
Automatic data receiving after transfer interruption.



Number of connected measuring systems: selectable option

Number of sub users for each BlueBox System: 10, more on request

Please test the functions of BlueGate:

1. Data transfer to the Internet server

Allocation of a data server with access to the Internet and a SQL data base.
Using a gateway the data of the BlueBox System will be transferred via a bidirectional TCP/IP-connection to your PC.

2. Remote maintenance

System access to the BlueBox, MPS, BlueMon and Systems for data backup, configuration and programming.
The usage of the functions is possible through the application of the relevant product software.

3. Browser functions

Process visualisation via browser in real-time
Graphical presentation of measured values via browser
Data export (CVS file, Excel)
Automatic alarm signal for defined events via e-mail
Support of customerspecific trigger functions
The main user of the BlueGate access can set up additional sub-user accounts with individual accesses rights.

4. Alarm function

Alarm in case of a breakdown of a BlueBox System via e-mail (optionally via SMS)
(Data transfer from the BlueBox System to the BlueGate Server is disconnected)
Minimal response time

5. Optional functions

Possibility for the integration of external SCADA systems via the Gateway function.
(SCADA – BlueBox Control Center (Art. no. 420 6203)
SMS Service with automatic alarm signal via SMS, for events defined by the customer
(BlueGate SMS Service Art. no. 420 6603)
Customized login for BlueGate with personalised login surface.
(BlueGate customized login Art. no. 420 6604)

Requirements for usage:

1. BlueBox System (BlueBox, MPS, or BlueMon Systems)
2. Continuous bidirectional network connection from the server to the BlueBox System (via TCP/IP, fixed IP address for the BlueBox Systems) by GPRS, UMTS or Internet access. (The costs for data transmissions are not included in our mentioned prices). The customer is responsible for the setup of the necessary network accesses, e.g. Firewall settings.

Recommended additions:

Installation of the PC software for the BlueBox (SQL database) Art. no. 420 6213 or PC software for the BlueMon (SQL database) Art. no. 420 8000.

Software version: 1.3

The customer is responsible for data back-up of his own measured data!

GO Systemelektronik takes no responsibility for security of data, programs and other settings.

Minimum contract duration: 12 months

After the contract period the contract will be renewed automatically for another 6 months, if not cancelled in writing within a period of 1 month prior to contract expiration.

The stored measurement data is deleted after completion of the contract!

Selectable option

Number of
connected
measuring
systems

Number of connected measuring systems

Pos.		
1	1 connected measuring system	1
2	2 connected measuring systems	2
3	3 connected measuring systems	3
4	4 connected measuring systems	4
5	5 connected measuring systems	5
6	6 connected measuring systems	6
7	7 connected measuring systems	7
8	8 connected measuring systems	8
9	9 connected measuring systems	9
10	10 connected measuring systems	10
11	11 connected measuring systems	11
12	12 connected measuring systems	12
13	13 connected measuring systems	13
14	14 connected measuring systems	14
15	15 connected measuring systems	15
16	16 connected measuring systems	16
17	17 connected measuring systems	17
18	18 connected measuring systems	18
19	19 connected measuring systems	19
20	20 connected measuring systems	20
21	21 connected measuring systems	21
22	22 connected measuring systems	22
23	23 connected measuring systems	23
24	24 connected measuring systems	24
25	25 connected measuring systems	25

Example configuration Art. no. 420 6601 1

PC software for the BlueMon (SQL database)

Article number
420 8000

PC Software for the BlueMon for the determination of parameters, measurement intervals, visualisation and management of further sensors.



The program comprises of the following modules:

1. Standard BlueMon software

This software is designed to manage any number of BlueMon measurement systems.

The following functions are available:

Set IP configuration

Setting the remote access configuration

Query the data from a BlueMon.

Change the sensor parameter name, sampling intervals and averaging.

2. Program cycle control BlueMon

Graphical programming and change of program cycle.

Creation of customer specific applications.

Creation of program cycles in the offline modus.

Time-controlled launch of program cycles.

3. Online monitor

Representation of all measured values in text form.

For one sensor a chart can be displayed online.

4. Visual 1

Visualization of four measurements in four charts, that are displayed below each other.

5. Visual N

Visualization of up to 16 readings from a BlueMon in a chart with a maximum of six axes.

6. Update

Tool for installing firmware updates onto the BlueMon.

7. Export tool

Export data from SQL database

in ASCII (compatible in Excel).

If you specify more than one sensor, the times are set to an adjustable time interval.

8. Retrieving BlueMon data via command line
(alternative to the monitor program)

9. Advanced Managing Software (AMS) for sensors and actuators

which are optionally connected via the CAN-bus (BlueMon compatible!)

Creating virtual sensors and actuators

input of mathematical functions for calculating

virtual sensors; create the logical links

of sensors and actuators (PLC functionality)

setting of time-functions

Entered settings and functions can be printed or saved for further processing and documentation.

Program to set up sensors and actuators.

The following features are supported:

Program to set up sensors and actuators,
Controls and alarms via e-mail and SMS.

Sensors: change the sensor-name, interval, averaging and resolution,
actuators (relays) arbitrary set of switching functions

Virtual sensors: change the sensor name, interval,
averaging, parameter, units and resolution
setting a function to compute virtual measurements.

E-mail/SMS: freely definable alerts

all functions can be defined with a scripting language into plain text.

The following language elements are supported:

- Variables: unlimited number, name up to 30 characters long.

Variable values can be stored on the BlueBox and
can be changed in the menu of BlueBox.

- Math functions: sin, cos, tan, asin, acos,
atan, sqrt, rad, deg, ln, log, e^x , abs, = ,

Protective immersion holder air flushing electrodes

Article number
462 1100

Immersion housing with compressed air cleaning for electrodes for the connection to a compressed air system.

For connection to the compressed air flushing system valve unit

Suitable for electrodes with PG13,5 G thread

Compressed air hose connection: 4mm for PE hose

Compressed air hose length: selectable option

Housing:

Length: 161 mm

Diameter: 38 mm

Material: POM

Sensor elements are not included!



Selectable options	Version	Connection	Compressed air hose length	Material
--------------------	---------	------------	----------------------------	----------

Version

Pos.		
1	version 1.0	1

Connection

Pos.		
2	4 mm	-4

Compressed air hose length

Pos.		
3	-	-/
4	2.5 m	-2,5
5	5 m	-5
6	10 m	-10
7	15 m	-15

Material

Pos.		
5	POM	-POM

Example configuration Art. no. 462 1100-**1-4-/POM**

Flow through fitting for BlueEC conductivity sensor

Article number
462 2020

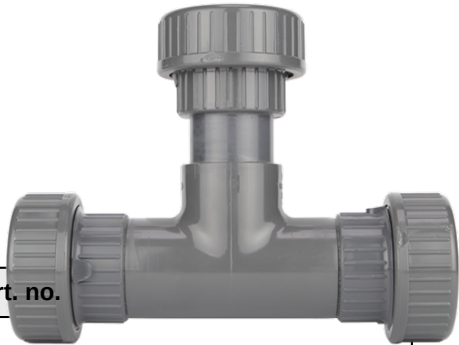
Fitting to insert the BlueEC conductivity sensor (Type 461 2092)

Material: PVC-U (DN40)
max. pressure: 6 bar at max. 60°C

Connection: selectable option

Selectable options

Pos.	Connection	Art. no.
1	4 mm tube	4
2	8 mm tube	8
3	10 mm tube	10
4	40 mm pipe	40
5	G3/8" thread	G3/8



Configuration example art. no. 462 2020-4

Flow through fitting for electrodes pH, ISE & Redox/ORP

Article number
462 5020

Fitting to insert an electrode with max.
120 mm installation length, Ø12 and PG 13.5 thread

Material: PVC-U (DN40)
max. pressure: 6 bar at max. 60°C

Connection: selectable option

Selectable options



Pos.	Connection	Art. no.
1	4 mm tube	4
2	8 mm tube	8
3	10 mm tube	10
4	40 mm pipe	40
5	G3/8" thread	G3/8

Configuration example art. no. 462 5020-4

PC software for the BlueBox (SQL database)

Article number
420 6213

PC Software for the BlueBox for the determination of parameters, measurement intervals, visualisation and management of further sensors.



The software consists of following modules:

1. Standard BlueBox software

This software is designed to manage any number of BlueBox measurement systems.

The following functions are available:

Set IP configuration

Setting the remote access configuration.

Query the data from a BlueBox.

Change the sensor parameter name, sampling intervals and averaging.

2. Monitor

This program calls in adjustable intervals of the measured data from a BlueBox and transfers them to the SQL database.

For this program, an existing network connection is required.

An automatic dialling via remote access is not supported.

3. Online monitor

Representation of all measured values in text form.

For one sensor a chart can be displayed online.

4. Visual 1

Visualization of up to four measurements in four charts, that are displayed below each other.

5. Visual N

Visualization of up to 16 readings from a BlueBox in a chart with a maximum of six axes.

6. Update

Tool for installing firmware updates onto the BlueBox.

7. Export tool

Export data from SQL database in ASCII (compatible in Excel).

If you specify more than one sensor, the times are set to an adjustable time interval.

8. Retrieving data BlueBox command line

(alternative to the monitor program)

9. Advanced Managing Software (AMS) for sensors and actuators

Creating virtual sensors and actuators

Input of mathematical functions for calculating

Virtual sensors; create the logical links of sensors and actuators (PLC functionality)

Setting of time-functions

Entered settings and functions can be printed or saved for further processing and documentation.

Program to set up sensors and actuators.

The following features are supported:

Program to set up sensors and actuators, controls and alarms via e-mail and SMS.

Sensors: change the sensor-name, interval, averaging and resolution,
actuators (relays) arbitrary set of switching functions

Virtual sensors: change the sensor name, interval,
averaging, parameter, units and resolution
setting a function to compute virtual measurements.

E-mail/SMS: freely definable alerts

All functions can be defined with a scripting language into plain text.

The following language elements are supported:

- Variables: unlimited number, name up to 30 characters long.

Variable values can be stored on the BlueBox and
can be changed in the menu of BlueBox.

- Math functions: sin, cos, tan, asin, acos,
atan, sqrt, rad, deg, ln, log, e^x , abs

, = ,

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Technical changes and mistakes are reserved.

Illustrations and pictures may differ from the original product.

420 6213	PC software for the BlueBox (SQL database)	63
420 6362	ISA CALC+	53
420 6601	BlueGate Cloud-Service	55
420 8000	PC software for the BlueMon (SQL database)	58
461 2092	BlueEC Inductive Conductivity Sensor	39
461 4000	Galvanic oxygen sensor	41
461 4610	Optical oxygen sensor	42
461 5109	pH Electrode - Process	43
461 6200	BlueTrace - Oil in Water Sensor	33
461 6600	BlueScan Plus - UV/Vis Spectrometer	23
461 6780	BlueTrace - Turbidity Sensor	35
461 7410	Ion-selective electrode for ammonium	45
461 9009	ORP Electrode - Process	46
461 MSH0	Multi Sensor Head - MSH	37
462 1100	Protective immersion holder air flushing electrodes	60
462 2020	Flow through fitting for BlueEC conductivity sensor	61
462 5020	Flow through fitting for electrodes pH, ISE & Redox/ORP	62

462 6125	Varinline® fitting for the ISA UV/Vis Spektrometer	51
462 6700	Retractable assembly	47
462 6753	Flow assembly for BlueTrace (stainless steel)	48
462 6754	Flow assembly for BlueTrace (PVC)	49
462 T010	Measuring pot small	52
462 T020	Measuring pot BlueTrace	50
485 0001	BlueSense transducer	9
486 0M60	Mobile UV/Vis Spectrometer System	12
486 00P0	BlueBox Panel	7
486 00R1	BlueBox R1 Controller	5
486 00RS-ISA-XX-UV-XX	ISA - UV/Vis Spectrometer System	3
486 6000	ISA - UV/Vis Spectrometer Module	25
486 CI00	BlueConnect I/O Module	29
486 CP00	BlueConnect Plus Module	30
486 CS00	BlueConnect Sensor Module	27
486 S810	Modbus / USB Converter	32
488 2FA0	BlueMon Ammonium	15

488 2FP0

BlueMon Orthophosphate	17
------------------------	----

488 2FP1

BlueMon Orthophosphate & Total Phosphorus	19
---	----

488 2TPN

BlueMon Total Nitrogen & Total Phosphorus	21
---	----

Accessories

BlueGate Cloud-Service	55
Flow assembly for BlueTrace (PVC)	49
Flow assembly for BlueTrace (stainless steel)	48
Flow through fitting for BlueEC conductivity sensor	61
Flow through fitting for electrodes pH, ISE & Redox/ORP	62
ISA CALC+	53
Measuring pot BlueTrace	50
Measuring pot small	52
PC software for the BlueBox (SQL database)	63
PC software for the BlueMon (SQL database)	58
Protective immersion holder air flushing electrodes	60
Retractable assembly	47
Varinline® fitting for the ISA UV/Vis Spektrometer	51

Actuator Module

BlueConnect I/O Module	29
BlueConnect Plus Module	30

Air

Protective immersion holder air flushing electrodes	60
---	----

Ammonium

BlueMon Ammonium	15
BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Ion-selective electrode for ammonium	45
Mobile UV/Vis Spectrometer System	12
Multi Sensor Head - MSH	37

Assembly

Flow assembly for BlueTrace (PVC)	49
Flow assembly for BlueTrace (stainless steel)	48
Retractable assembly	47

Biochemical Oxygen Demand (BOD)

BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12

BlueBox

BlueBox Panel	7
BlueBox R1 Controller	5
PC software for the BlueBox (SQL database)	63

BlueConnect

BlueConnect I/O Module	29
BlueConnect Plus Module	30
BlueConnect Sensor Module	27

BlueEC

BlueEC Inductive Conductivity Sensor	39
Flow through fitting for BlueEC conductivity sensor	61

BlueGate

BlueGate Cloud-Service	55
------------------------	----

BlueMon

BlueMon Ammonium	15
BlueMon Orthophosphate	17
BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21
PC software for the BlueMon (SQL database)	58

BlueScan

BlueScan Plus - UV/Vis Spectrometer	23
-------------------------------------	----

BlueSense

BlueSense transducer	9
----------------------	---

BlueTrace

BlueTrace - Oil in Water Sensor	33
BlueTrace - Turbidity Sensor	35
Flow assembly for BlueTrace (PVC)	49
Flow assembly for BlueTrace (stainless steel)	48
Measuring pot BlueTrace	50

BOD5

BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12

CALC+

ISA CALC+	53
-----------	----

Chemical Oxygen Demand (COD)

BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3

Mobile UV/Vis Spectrometer System	12
Cloud-Service	
BlueGate Cloud-Service	55
Colour / Hazen	
BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12
Complete Systems	
BlueBox Panel	7
BlueBox R1 Controller	5
BlueMon Ammonium	15
BlueMon Orthophosphate	17
BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21
BlueSense transducer	9
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12
Conductivity	
BlueEC Inductive Conductivity Sensor	39
Flow through fitting for BlueEC conductivity sensor	61
Multi Sensor Head - MSH	37
Conductivity (inductive)	
BlueEC Inductive Conductivity Sensor	39
Multi Sensor Head - MSH	37
Contamination Alarm	
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12
Controller	
BlueBox R1 Controller	5
Converter	
Modbus / USB Converter	32
Current Input (4-20mA)	
BlueConnect I/O Module	29
BlueConnect Plus Module	30
Current Output (4-20mA)	
BlueConnect I/O Module	29
BlueConnect Plus Module	30

Database

See also: SQL Database

Digital Output

BlueConnect I/O Module	29
BlueConnect Plus Module	30
BlueConnect Sensor Module	27
BlueEC Inductive Conductivity Sensor	39
BlueTrace - Oil in Water Sensor	33
Multi Sensor Head - MSH	37
Optical oxygen sensor	42

Dissolved

See also: Dissolved Organic Carbon (DOC), Dissolved Organic Matter, Dissolved Oxygen

Dissolved Organic Carbon (DOC)

BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12

Dissolved Organic Matter

ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3

Dissolved Oxygen

Galvanic oxygen sensor	41
Multi Sensor Head - MSH	37
Optical oxygen sensor	42

Drinking Water

BlueBox Panel	7
BlueBox R1 Controller	5
BlueConnect I/O Module	29
BlueConnect Plus Module	30
BlueConnect Sensor Module	27
BlueEC Inductive Conductivity Sensor	39
BlueGate Cloud-Service	55
BlueMon Ammonium	15
BlueMon Orthophosphate	17
BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21
BlueScan Plus - UV/Vis Spectrometer	23
BlueSense transducer	9
BlueTrace - Oil in Water Sensor	33
BlueTrace - Turbidity Sensor	35
Flow assembly for BlueTrace (PVC)	49
Flow assembly for BlueTrace (stainless steel)	48
Flow through fitting for BlueEC conductivity sensor	61
Flow through fitting for electrodes pH, ISE & Redox/ORP	62

Galvanic oxygen sensor	41
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
ISA CALC+	53
Ion-selective electrode for ammonium	45
Measuring pot BlueTrace	50
Measuring pot small	52
Mobile UV/Vis Spectrometer System	12
Modbus / USB Converter	32
Multi Sensor Head - MSH	37
ORP Electrode - Process	46
Optical oxygen sensor	42
PC software for the BlueBox (SQL database)	63
PC software for the BlueMon (SQL database)	58
Protective immersion holder air flushing electrodes	60
Retractable assembly	47
Varinline® fitting for the ISA UV/Vis Spektrometer	51
pH Electrode - Process	43
Electrode	
Flow through fitting for electrodes pH, ISE & Redox/ORP	62
Ion-selective electrode for ammonium	45
ORP Electrode - Process	46
Protective immersion holder air flushing electrodes	60
pH Electrode - Process	43
Electrode Chemical	
Galvanic oxygen sensor	41
Environmental Monitoring	
BlueBox Panel	7
BlueBox R1 Controller	5
BlueConnect I/O Module	29
BlueConnect Plus Module	30
BlueConnect Sensor Module	27
BlueEC Inductive Conductivity Sensor	39
BlueGate Cloud-Service	55
BlueMon Ammonium	15
BlueMon Orthophosphate	17
BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21
BlueScan Plus - UV/Vis Spectrometer	23
BlueSense transducer	9
BlueTrace - Oil in Water Sensor	33
BlueTrace - Turbidity Sensor	35
Flow assembly for BlueTrace (PVC)	49
Flow assembly for BlueTrace (stainless steel)	48
Flow through fitting for BlueEC conductivity sensor	61
Flow through fitting for electrodes pH, ISE & Redox/ORP	62
Galvanic oxygen sensor	41

ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
ISA CALC+	53
Ion-selective electrode for ammonium	45
Measuring pot BlueTrace	50
Measuring pot small	52
Mobile UV/Vis Spectrometer System	12
Modbus / USB Converter	32
Multi Sensor Head - MSH	37
ORP Electrode - Process	46
Optical oxygen sensor	42
PC software for the BlueBox (SQL database)	63
PC software for the BlueMon (SQL database)	58
Protective immersion holder air flushing electrodes	60
Retractable assembly	47
Varinline® fitting for the ISA UV/Vis Spektrometer	51
pH Electrode - Process	43
Fingerprint	
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12
Fitting	
Flow through fitting for BlueEC conductivity sensor	61
Flow through fitting for electrodes pH, ISE & Redox/ORP	62
Varinline® fitting for the ISA UV/Vis Spektrometer	51
Flow	
Flow assembly for BlueTrace (PVC)	49
Flow assembly for BlueTrace (stainless steel)	48
Flow through fitting for BlueEC conductivity sensor	61
Flow through fitting for electrodes pH, ISE & Redox/ORP	62
Flow-Through Armatures	
Flow assembly for BlueTrace (PVC)	49
Flow assembly for BlueTrace (stainless steel)	48
Flow through fitting for BlueEC conductivity sensor	61
Flow through fitting for electrodes pH, ISE & Redox/ORP	62
Retractable assembly	47
Flow-Through Measurement	
BlueEC Inductive Conductivity Sensor	39
BlueMon Ammonium	15
BlueMon Orthophosphate	17
BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21
BlueTrace - Oil in Water Sensor	33
BlueTrace - Turbidity Sensor	35
ISA - UV/Vis Spectrometer Module	25

ISA - UV/Vis Spectrometer System	3
Ion-selective electrode for ammonium	45
ORP Electrode - Process	46
pH Electrode - Process	43
Flow Through	
See also: Flow, Flow-Through Armatures, Flow-Through Measurement	
Fluorescence	
BlueTrace - Oil in Water Sensor	33
Flushing	
Protective immersion holder air flushing electrodes	60
Galvanic	
Galvanic oxygen sensor	41
Glass Electrode	
Multi Sensor Head - MSH	37
ORP Electrode - Process	46
pH Electrode - Process	43
Head	
Multi Sensor Head - MSH	37
Holder	
Protective immersion holder air flushing electrodes	60
I/O	
BlueConnect I/O Module	29
Immersion	
Protective immersion holder air flushing electrodes	60
Immersion Assembly	
Protective immersion holder air flushing electrodes	60
Immersion Measurement	
BlueEC Inductive Conductivity Sensor	39
BlueScan Plus - UV/Vis Spectrometer	23
BlueTrace - Oil in Water Sensor	33
BlueTrace - Turbidity Sensor	35
Galvanic oxygen sensor	41
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Ion-selective electrode for ammonium	45
Mobile UV/Vis Spectrometer System	12
Multi Sensor Head - MSH	37
ORP Electrode - Process	46
Optical oxygen sensor	42

pH Electrode - Process	43
Inductive	
BlueEC Inductive Conductivity Sensor	39
Ion-Selective	
Ion-selective electrode for ammonium	45
ISA	
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
ISA CALC+	53
Varinline® fitting for the ISA UV/Vis Spektrometer	51
ISE	
Flow through fitting for electrodes pH, ISE & Redox/ORP	62
Ion-selective electrode for ammonium	45
Multi Sensor Head - MSH	37
Level	
BlueScan Plus - UV/Vis Spectrometer	23
Measurement and Control Systems	
BlueBox Panel	7
BlueBox R1 Controller	5
BlueSense transducer	9
Measuring	
Measuring pot BlueTrace	50
Measuring pot small	52
Measuring Pot	
Measuring pot BlueTrace	50
Measuring pot small	52
Mobile	
Mobile UV/Vis Spectrometer System	12
Modbus	
Modbus / USB Converter	32
Module	
BlueConnect I/O Module	29
BlueConnect Plus Module	30
BlueConnect Sensor Module	27
ISA - UV/Vis Spectrometer Module	25
MSH	
Multi Sensor Head - MSH	37

Multi

Multi Sensor Head - MSH	37
-------------------------	----

Nitrate

BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12
Multi Sensor Head - MSH	37

Nitrite

BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12

Nitrogen

See also: Total Nitrogen (TN)	
BlueMon Total Nitrogen & Total Phosphorus	21

Oil

BlueTrace - Oil in Water Sensor	33
---------------------------------	----

Oil in Water

BlueTrace - Oil in Water Sensor	33
---------------------------------	----

Online Analysers

BlueMon Ammonium	15
BlueMon Orthophosphate	17
BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21

Optical

BlueTrace - Oil in Water Sensor	33
BlueTrace - Turbidity Sensor	35
Optical oxygen sensor	42

Organic Carbon

See also: Total Organic Carbon (TOC)	
--------------------------------------	--

ORP

ORP Electrode - Process	46
-------------------------	----

Orthophosphate

BlueMon Orthophosphate	17
BlueMon Orthophosphate & Total Phosphorus	19
BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12

Oxygen

Galvanic oxygen sensor	41
Optical oxygen sensor	42

Panel

BlueBox Panel	7
---------------	---

PC

PC software for the BlueBox (SQL database)	63
PC software for the BlueMon (SQL database)	58

pH

Flow through fitting for electrodes pH, ISE & Redox/ORP	62
Multi Sensor Head - MSH	37
pH Electrode - Process	43

Phosphorus

BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21

Photometrie

BlueMon Ammonium	15
BlueMon Orthophosphate	17
BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21

Physical

Galvanic oxygen sensor	41
------------------------	----

Plus

BlueConnect Plus Module	30
BlueScan Plus - UV/Vis Spectrometer	23

Pot

Measuring pot BlueTrace	50
Measuring pot small	52

Process

ORP Electrode - Process	46
pH Electrode - Process	43

Process Measurement and Control Technology

BlueBox Panel	7
BlueBox R1 Controller	5
BlueConnect I/O Module	29
BlueConnect Plus Module	30
BlueConnect Sensor Module	27
BlueEC Inductive Conductivity Sensor	39
BlueGate Cloud-Service	55
BlueMon Ammonium	15

BlueMon Orthophosphate	17
BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21
BlueScan Plus - UV/Vis Spectrometer	23
BlueSense transducer	9
BlueTrace - Oil in Water Sensor	33
BlueTrace - Turbidity Sensor	35
Flow assembly for BlueTrace (PVC)	49
Flow assembly for BlueTrace (stainless steel)	48
Flow through fitting for BlueEC conductivity sensor	61
Flow through fitting for electrodes pH, ISE & Redox/ORP	62
Galvanic oxygen sensor	41
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
ISA CALC+	53
Ion-selective electrode for ammonium	45
Measuring pot BlueTrace	50
Measuring pot small	52
Mobile UV/Vis Spectrometer System	12
Modbus / USB Converter	32
Multi Sensor Head - MSH	37
ORP Electrode - Process	46
Optical oxygen sensor	42
PC software for the BlueBox (SQL database)	63
PC software for the BlueMon (SQL database)	58
Protective immersion holder air flushing electrodes	60
Retractable assembly	47
Varinline® fitting for the ISA UV/Vis Spektrometer	51
pH Electrode - Process	43
 Protective	
Protective immersion holder air flushing electrodes	60
 Pulse Input	
BlueConnect I/O Module	29
BlueConnect Plus Module	30
 PVC	
Flow assembly for BlueTrace (PVC)	49
 R1	
BlueBox R1 Controller	5
 Redox	
See also: pH	
 Redox (ORP)	
Multi Sensor Head - MSH	37
ORP Electrode - Process	46

Redox/ORP

Flow through fitting for electrodes pH, ISE & Redox/ORP	62
---	----

Refined Fuels in Water

BlueTrace - Oil in Water Sensor	33
---------------------------------	----

Relay

BlueConnect I/O Module	29
BlueConnect Plus Module	30

Retractable

Retractable assembly	47
----------------------	----

SAC

Mobile UV/Vis Spectrometer System	12
-----------------------------------	----

SAC254 / UV254

ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12

Sensor

BlueConnect Sensor Module	27
BlueEC Inductive Conductivity Sensor	39
BlueScan Plus - UV/Vis Spectrometer	23
BlueTrace - Oil in Water Sensor	33
BlueTrace - Turbidity Sensor	35
Flow through fitting for BlueEC conductivity sensor	61
Galvanic oxygen sensor	41
Ion-selective electrode for ammonium	45
Multi Sensor Head - MSH	37
ORP Electrode - Process	46
Optical oxygen sensor	42
pH Electrode - Process	43

Sensor Module

BlueConnect I/O Module	29
BlueConnect Plus Module	30
BlueConnect Sensor Module	27

Serial Interface

BlueConnect I/O Module	29
BlueConnect Plus Module	30
BlueConnect Sensor Module	27

Small

Measuring pot small	52
---------------------	----

SmartModules

BlueConnect I/O Module	29
------------------------	----

BlueConnect Plus Module	30
BlueConnect Sensor Module	27
Modbus / USB Converter	32
Software	
ISA CALC+	53
PC software for the BlueBox (SQL database)	63
PC software for the BlueMon (SQL database)	58
Spectrometer	
BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12
Spektrometer	
Varinline® fitting for the ISA UV/Vis Spektrometer	51
SQL	
See also: SQL Database	
SQL Database	
PC software for the BlueBox (SQL database)	63
PC software for the BlueMon (SQL database)	58
Stainless	
See also: Stainless Steel	
Stainless Steel	
Flow assembly for BlueTrace (stainless steel)	48
Steel	
See also: Stainless Steel	
Suspended Solids	
See also: Total Suspended Solids (TSS)	
System	
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12
Temperature	
BlueEC Inductive Conductivity Sensor	39
BlueScan Plus - UV/Vis Spectrometer	23
BlueTrace - Turbidity Sensor	35
Galvanic oxygen sensor	41
Multi Sensor Head - MSH	37
pH Electrode - Process	43
Total	

BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21
Total Nitrogen (TN)	
BlueMon Total Nitrogen & Total Phosphorus	21
BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12
Total Organic Carbon (TOC)	
BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12
Total Phosphorous (TP)	
BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21
BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12
Total Suspended Solids (TSS)	
BlueScan Plus - UV/Vis Spectrometer	23
BlueTrace - Turbidity Sensor	35
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12
Transducer	
BlueSense transducer	9
Turbidity	
BlueScan Plus - UV/Vis Spectrometer	23
BlueTrace - Turbidity Sensor	35
Mobile UV/Vis Spectrometer System	12
USB	
Modbus / USB Converter	32
UV/VIS	
BlueScan Plus - UV/Vis Spectrometer	23
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
Mobile UV/Vis Spectrometer System	12
Varinline® fitting for the ISA UV/Vis Spektrometer	51
UV/Vis Module	

BlueScan Plus - UV/Vis Spectrometer	23
Varinline®	
Varinline® fitting for the ISA UV/Vis Spektrometer	51
Waste Water	
BlueBox Panel	7
BlueBox R1 Controller	5
BlueConnect I/O Module	29
BlueConnect Plus Module	30
BlueConnect Sensor Module	27
BlueEC Inductive Conductivity Sensor	39
BlueGate Cloud-Service	55
BlueMon Ammonium	15
BlueMon Orthophosphate	17
BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21
BlueScan Plus - UV/Vis Spectrometer	23
BlueSense transducer	9
BlueTrace - Oil in Water Sensor	33
BlueTrace - Turbidity Sensor	35
Flow assembly for BlueTrace (PVC)	49
Flow assembly for BlueTrace (stainless steel)	48
Flow through fitting for BlueEC conductivity sensor	61
Flow through fitting for electrodes pH, ISE & Redox/ORP	62
Galvanic oxygen sensor	41
ISA - UV/Vis Spectrometer Module	25
ISA - UV/Vis Spectrometer System	3
ISA CALC+	53
Ion-selective electrode for ammonium	45
Measuring pot BlueTrace	50
Measuring pot small	52
Mobile UV/Vis Spectrometer System	12
Modbus / USB Converter	32
Multi Sensor Head - MSH	37
ORP Electrode - Process	46
Optical oxygen sensor	42
PC software for the BlueBox (SQL database)	63
PC software for the BlueMon (SQL database)	58
Protective immersion holder air flushing electrodes	60
Retractable assembly	47
Varinline® fitting for the ISA UV/Vis Spektrometer	51
pH Electrode - Process	43
Water	
BlueTrace - Oil in Water Sensor	33
Water Pressure	
BlueScan Plus - UV/Vis Spectrometer	23

Web Interface and Cloud Functionality

BlueGate Cloud-Service	55
------------------------	----

Wet Chemical

BlueMon Ammonium	15
BlueMon Orthophosphate	17
BlueMon Orthophosphate & Total Phosphorus	19
BlueMon Total Nitrogen & Total Phosphorus	21

