s::can

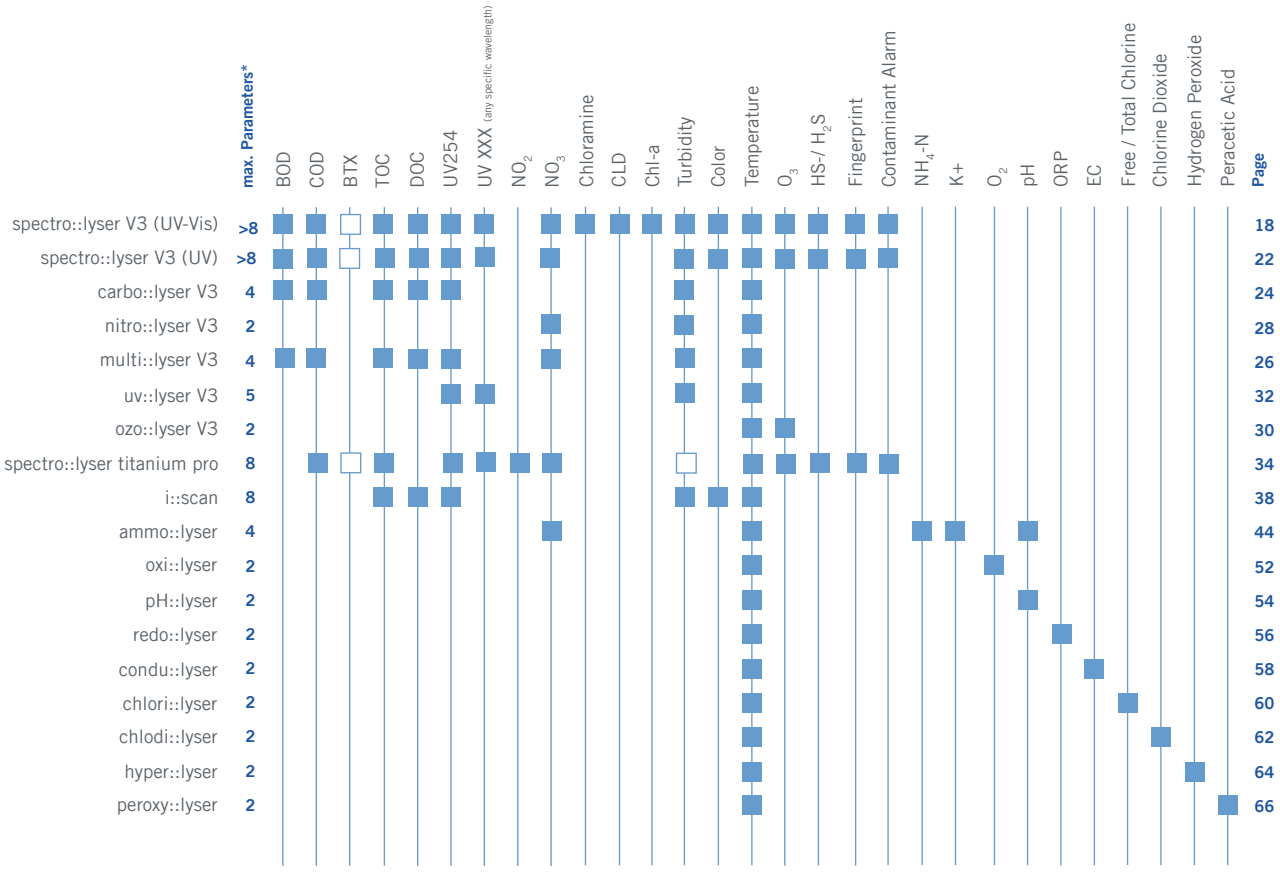
A Badger Meter® Brand

Drinking Water

Water Quality Online

Parameter & Product Overview

This is an overview of all the products and their respective parameters. Take a look at the parameters that you need to measure and choose the right product for your application. Further information can be found on the stated page number.



* The number of parameters is depending on the specific configuration of the monitoring system.

s::can
A Badger Meter® Brand

Table of Contents

A warm welcome to s::can, a Badger Meter brand!

You are holding the catalogue from s::can GmbH in your hands – your guide to innovative water quality monitoring solutions, tailored to your individual needs.

s::can is the world technology leader for submersible online UV-Vis spectrometer probes and provides monitoring systems and software for drinking-, environmental-, waste-, and industrial water applications.

We are Smart Water.

For more than 23 years s::can has been on the forefront of developing and distributing innovative, reliable online water quality monitoring products. Since November 2020 s::can is proudly part of Badger Meter Inc.'s Water Quality Division. Together with Badger Meter, ATi and Syrinix we offer you integrated, customer-centric, world class Smart Water solutions.

Badger Meter is an industry-leading innovator in flow measurement, water quality and control products, serving water utilities, municipalities and commercial and industrial customers worldwide. In the near future, Badger Meter's software solutions are going to integrate data from s::can products and provide utility management with greater visibility, control and optimized information. ATi is a leading provider of analytical sensors and monitoring solutions for water and gas applications. Syrinix offers a combination of network monitoring equipment with a cloud-based data platform, expert advisory analysis and management services.

With our collective expertise and combined experience we are creating robust digital solutions to operationalize real-time data into actionable insights that drive better results, optimize operations, reduce costs and provide a broad product and solutions range for all your water quality monitoring needs.

Water is global, and so are we.

We are constantly enhancing our products and services, and with that expanding our presence globally. Next to our headquarters in the USA and the former s::can headquarters in Austria you can find Water Quality subsidiaries and Sales offices in Mexico, UK, France, Spain, China, Singapore and Dubai. Our Sales Partner network with more than 50 partners allows us to cover the needs of our customers worldwide.

We aim to preserve the world's most precious resource and consider online water quality monitoring the essential basis for this goal. Monitoring combined with optimization of treatments and processes helps to minimize water pollution and to secure a high water quality for our planet as well as a livable, sustainable future.

Intelligent. Optical. OnLine.

Our Services & Our Guarantees

Whether it is a simple pH sensor or a complex spectral probe, s::can instruments are intelligent and compatible with third-party systems. All sensors can communicate with all s::can terminals, being operated without a terminal and even can be integrated directly into your control system. s::can software guides the instruments from first installation, over to maintenance and calibration. The instruments have a comprehensive repertoire of self-diagnosis functions, informing you immediately on any deviation in water quality. Once you are familiarized with s::can software, the intuitive procedure is always the same, keeping operations as simple as possible.

Optical

Organically developed, constantly improved, and tested, optical sensors ensure the simplest and most reliable way to measure water quality. It does 't matter whether it is COD, TOC, NO_3, NO_2, TSS, turbidity, dissolved oxygen, or many other parameters, whenever it is possible, we use optical methods. The instruments simply ensure low maintenance costs and easy handling for operators.
In case a parameter cannot be measured with optical methods, s::can offers you a broad repertoire on other sensors covering most of the important parameters in water quality.
One of our best examples is the ammo::lyser™,an ion selective ammonium probe, using a combination of electrodes for pH and potassium compensation, ensuring a fast and reliable NH4 measurement. With the ammo::lyser™, we have set new standards and won many trials against comparable instruments.

OnLine & InSitu

On top there are our fully modular compact monitoring stations that combine instruments and terminals to build a variable water quality tool. Presenting a complete station solution, only with connecting water and power supply, open a new world of water quality monitoring in respect of variety of information and parameters to the user.
For instance the combination of the parameters COD, BOD, NO_3, NH_4, NO_2, TSS and pH can be measured with only two s::can probes and one terminal, replacing an entire container of conventional cabinet analyzers and thereby revolutionizing water and waste water monitoring around the world. Whether in bypass monitoring stations or in submerged installations, we are proud of having created and continuously improved all of this in the last 20 years and have created new standards in water quality monitoring. Since 2000 when we launched our first spectro::lyser™, today, over 10.000 systems were sold, making s::can the global market leader in online spectroscopy.

Our Services & Our Guarantees

About our prices

Have you ever been annoyed of buying a cheap printer and later notice that the ink cartridge costs nearly the same as the printer? Unfortunately, a similar trend arises in the sector of water quality monitoring -.
s::can does not try to make profit with „consumables" such as reagents and spare parts, hitting the customer with unexpected costs. The consumables strategy contradicts our principles of fairness and sustainability. We make our revenue with water quality instruments. Most of our probes are designed in such a way that they need no consumables at all. If needed, the use of consumables is on the technically feasible minimum. The operating costs of our instruments are typically very low due to reduced maintenance effort.

Cost Guarantee - No surprises over many years

Within the framework of individual service contracts and for an annual fee we will be happy to give you a guarantee to cover all costs that might arise in the operation of our instruments, beyond our comprehensive standard guarantees. For 3 years, 5 years or even more Whenever you compare our instruments with other manufacturers, you will be amazed how inexpensive s::can measuring systems are to operate.

Quality Guarantee - No one can do more for optimum quality

The effort that we make in controlling quality in production is probably unique. Just visit us at our production facility in Vienna, Austria and we will be happy to show you our production plant and our QS system. We are only allowing reliable, simple and at the same time intelligent sensors being part of our measuring systems. We give a minimum 2-year full guarantee on all sensors.

"CleanData" Guarantee - And you can focus on your own job

Within service contracts we will also be happy to give functionality and availability guarantees. In this case our local partners handle the installation, setup, calibration and maintenance of your instruments and we send you regular reports on measuring performance and automatically give you service recommendations if you allow us remote access to the measuring system. Our customer service team will even investigate your application and give you suggestions in case of any non-considerations at the commissioning of your measuring system. You can focus on your central tasks while we are focusing on your water quality.

Environmental Guarantee - Monitoring the environment, not polluting it

Our measuring instruments are built in a way to not use chemicals or produce any waste during operations. Most s::can instruments operate for many years without consuming any replacement or spare parts. We are taking care to avoid environmentally harmful processes or chemicals in manufacturing. Even the packing of our instruments is accomplished in the most sustainable way. Every of our instruments leaves a truly negligible "ecological footprint" compared to traditional laboratory methods, quick test, and analyzer technologies.

Our services + Our guarantees = your benefit

Water Quality Parameters

Correlation with laboratory parameters

It's often a requirement of customers with legal duties to verify the accuracy of online sensors with standardized reference methods in the laboratory. This audit is indispensable – but often not trivial.

For comparison of laboratory analysis with online technologies a few factors must be considered. First the representativity of the sampling point, compared to the online sensor installation. Second, incorrect storage and transportation can lead to changes in the composition of the sample. These two factors have a deep impact on the laboratory analysis, rather than the analysis itself. Depending highly on the parameter, application and operator skills but occurs even when work is proper done. The online measurement value is very often higher than the laboratory measurement since parts of the target substance is often lost during sample handling. Over the years we collected many examples where, despite the use of quality-controlled reference methods, parameters such as BOD, COD, NO_3-N, and TSS were systematically 10 – 20% higher compared to laboratory measurements. Further these values were taken for calibration of the online sensor leading into too low online measurement values. In our experience a very good correlation can normally be achieved between the online sensor and the laboratory, but it takes a lot of specialist knowledge and experience. We are very happy to support our customers to achieve the best possible results with our comprehensive experience.

In recent years many countries have witnessed a change of paradigm towards the recognition of online methods The tremendous operational advantages gained from continuously measuring in high resolution, opens a new world in water quality monitoring.

With more than 20 years of experience in the field of comparative studies, after over hundreds technical commissioning's and approvals, and with dozen tests in many countries of the world, s::can can offer you the best possible support. We know what is essential, even in the most distinct applications that can occur in water management. Our feasibility studies and calibration reports are well known throughout the sector, are worked out diligently by scientists and well experienced technicians in our team using approved methods.

Parameter Overview

"Why do we measure"

The goal of quality monitoring various natural waters and drinking waters is the reduction of harmful effects to our environment and our human health. This aim must fulfil various guidelines that are defined in ecological and drinking water quality regulations. Because of the continuous efforts to improve the quality of natural waters, to reduce the health risks of water consumers and to optimize the efficiency of drinking and waste water treatment, the requirements for process technology and for quality control of water are always increasing.

Therefore, reliable monitoring stations that provide continuous data are an essential tool in the drinking water supply and environmental protection - both for real time process control as well as for continuous monitoring of the water quality. In environmental applications as well as in drinking water, s::can monitoring stations have been in use for many years. Their technological and methodological have set new standards with respect to measurement performance and have often opened completely new opportunities for drinking water security and environmental protection.

"How do we measure"

All s::can instruments are pre-calibrated ex works. The s::can terminals are equipped with respective connectors and software for operation the s::can probes. All s::can measurement systems consisting of standardized s::can products are ready for use without the need for complex initialization procedures on site . This does not only allow save time during initial operation, but also reduces avoidable errors.

Manufactured using highly resistant materials and tested according to the highest quality standards, s::can measurement instruments can be used in practically all types of waters. The highly optimized design eliminates all moving parts in contact with water. This reduces failures and maintenance drastically.

Using standardized mounting devices, s::can spectrometer probes can be installed quickly and effortlessly, either submersed (in Situ) or in flow cells (by-pass, monitoring station).

All s::can instruments are intelligent -and in comparison to other suppliers local calibrations are stored on the instruments and auto-diagnosis procedures ensure the integrity of the sensor

Suitable for a wide range of applications, ranging from very low up to very high concentrations, from sum parameters to measurement of single substances, from ultra-pure water to industrial waste waters, s::can monitoring systems provide reliable and accurate readings. Even in such applications, that had remained untouched for other instruments and technologies.

The s::can Solution

The spectrometer probe

Out of the laboratory - into the water. Away from the complicated and high-maintenance cabinet analyzers towards reliable and simple online technologies with submersible spectrometers. A trend for the future of water management? We are convinced of it. s::can spectrometer probes need practically no maintenance, are extremely robust and durable and keep measuring for years, 24 hours a day. The advantages are obvious and are described later in more detail for individual measurement parameters.

	Spectrometric	Photometric	Cabinet analyser
Accuracy	★★★	★	★★★★
Stability (drift)	★★★★	★★★	★★
Calibration effort	★★★	★★	★★★★
Maintenance effort	★★★★★	★★★★	★
Purchase costs	★★★★	★★★★	★
Operating costs	★★★★★	★★★★	★

Comparison of various procedures for monitoring organic chemistry

The spectrometer probe ...

... provides several crucial advantages over simpler photometer probes:

1) A tremendous number of parameters can be measured at once, with a single probe. This flexibility also permits extension of the range of parameters for future applications which have not been considered at an early stage.

2) Especially in difficult applications the measurement is more stable regarding cross-sensitivities and therefore more accurate than classic photometer probes.

3) Even in these special applications, you will find spectral data correlating well with the substances of interest. In the event of major changes in water composition, only a new calibration is required, and our team will be happy to support you in this case.

4) Many single substances can be identified against fluctuating changes in the water matrix and subsequently quantified with chemometric tools which cannot be used at all with simple photometric probes.

5) Distinguishing between total and dissolved substances is possible. s::can uses a sophisticated mathematical algorithm that allows this distinction. This algorithm can also be adapted as per your needs and applications.

6) The intelligent spectral alarm allows detection of deviations from a normal water composition and provides an associated alarm signal. This method is now acknowledged and in use around the world, e.g., in drinking water and river water alarm systems and industrial discharge monitoring.

Conventional Solutions

The traditional cabinet analyser

This type of instrument has been in use for about the last 30 years for measuring most chemical parameters. These analyzers can often only be maintained with high effort, they consume chemicals and spare parts, pollute the environment, and need frequent attention. Usually, they are so expensive and unreliable in operation that users just shut down these instruments after some period of time.

The simple photometric probe

... despite its disadvantages, still in widespread use today, because for a long time there was no alternative available for monitoring organic carbon compounds. It is also used for monitoring other compounds, like NO_3.
Since these probes can only measure one parameter, the flexibility is very restricted. The measurement of COD was assumed to be impossible simply by an unusual water change.
However, with clear water and completely stable water composition, good results can sometimes be achieved. With fluctuations in turbidity, a second wavelength must also be considered for compensation - still this does not deliver the same accurate results compared to a full spectral compensation (see picture).

These simple probes are not able to deal with water matrix fluctuations and they often provide results that are not sufficiently correlated with the real concentration of the parameter of desire. Since these probes remain restricted to single parameter monitoring, a substantial cost disadvantage compared with a spectral probe arises.

The s::can Solution

s::can spectral instruments capture the major variety of organic carbon compounds, covering approximately 80% in drinking and waste water. The comparison between laboratory COD or laboratory TOC and spectroscopically determined values should always be better than 90% depending on the range and distribution of your reference samples, used for calibration. If that does not work out or is not satisfactory for you, please directly contact s::can Support (email: support@s-can.at).

For many applications the solid and therefor, carbon removal is crucially important. Therefore, the distinction of total COD and dissolved COD, or between TOC and DOC is of major importance. The spectro::lyser has the ability via highly distinct compensation algorithms to capture both fractions (with and without solids).

Another great advantage of spectrometry is that it cannot only measure the concentrations of total and dissolved organic compounds- it can even detect single substances out of a potpourri of carbons in the water It is possible to distinguish between “normal” and “abnormal” organic composition with our event detection tools. The s::can spectrometer probe is now accepted by public authorities in many countries as a measuring methodology for COD or TOC, and we see an upgoing trend worldwide.

Spectral BOD, provided by s::can has nothing to do with the widely used simple correlation of BOD with UV254 that is used by other manufacturers but which rarely works reliably.
Spectral algorithms were developed for various waters from thousands of samples, and these are based on the absorption of light of biologically easily accessible carbon compounds (e.g. proteins, acids etc.) in the wavelength range. (See diagram on the next page).
It is always recommended that the BOD (as opposed to other spectral parameters) be calibrated after commissioning of a measuring station by comparison with a reference method.

Conventional Solutions

COD

In the attempt to come as close as possible to the normative standards, laboratory methods were transferred to field analyzers. As these methods are not practical in process and field applications, these analyzers are expensive in procurement and operations, complicated to maintain, unreliable and harmful to the environment. The quality of measurement achieved is usually less than the given specification since vewry few users have the interest to deal with these instruments to keep them in reliable operation.
Even if these instruments work under perfect conditions, it is not possible, to capture fast harmful or even toxic spills as their measuring time, from sample to result is quite high.

COD dissolved

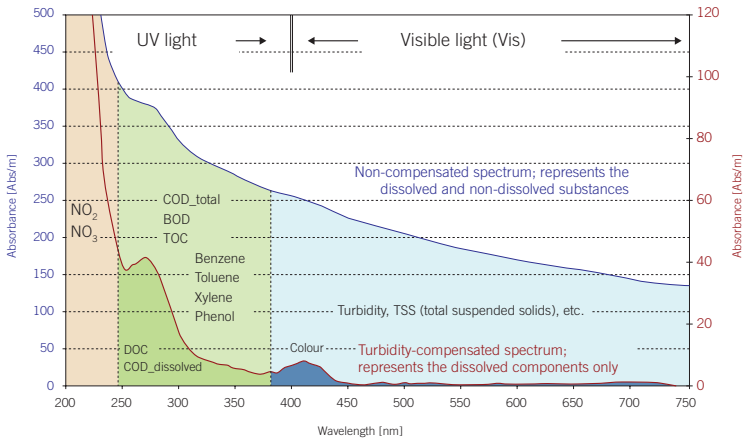
That’s the reason replacing of COD cabinet analyzers is one of s::can’s major areas of business.

TOC

The same pertains for TOC analyzers.

BOD

Although BOD is a very interesting parameter, for monitoring source water and design of wastewater treatment plants, it is difficult to sample, prepare and also you will the measurement results only after 5 days analyze. Among other things, measurement in the presence of inhibitors regularly causes problems.
BOD cabinet analyzers do not reflect BOD according to the standard and they must therefore first be compared themselves with the laboratory method and then calibrated accordingly. The maintenance effort of BOD analyzers may be substantial, which is why BOD is rarely measured online with any dedication.



s::can measuring method – "Fingerprint"

The s::can Solution

NO_3-N

Depending on the method, a spectral probe measures the nitrate concentration with much higher accuracy and stability and more independent from cross-sensitivities than a simple photometric probe (see diagram below).

The NO_3 value is accurately measured and displayed by s::can spectral probes in many applications without calibration. Depending on the application different path lengths are available, reaching from 35mm in drinking water down to 0.75mm in wastewater.

The NO_3 value measured by s::can spectral probes is extremely stable in respect to matrix fluctuations. Thus, for instance, an accurate NO_3 value can be measured with one and the same instrument in most flows without local calibration and independent from typical daily, weekly, or seasonal fluctuations either. Many subsequent years of operation are characterized by low maintenance and high resolution monitoring making the spectro::lyser a perfect solution

Comparison of various methods for monitoring NO_3-N

	Spectrometric	Photometric	ISE
Accuracy	★★★★★	★★★	★★
Stability (drift)	★★★★	★★★	★
Calibration effort	★★★★★	★★★	★
Maintenance effort	★★★★★	★★★★	★★★
Purchase costs	★★	★★★	★★★
Operating costs	★★★★★	★★★★	★

Conventional Solutions

Nitrate is hardly ever measured these days with cabinet analyzers since these also create disadvantages (hydraulic sampling, reagent consumption, maintenance effort etc.
Ion-selective (ISE) probes have also recently experienced a renaissance in nitrate measurement. However, by contrast with ammonium, the nitrate membranes available today are not so practical in use because they require more maintenance and need more attention. However, ISE probes are increasingly being offered as an alternative to control nutrient removal processes, often in combination with ammonium.

The s::can Solution

s::can has achieved a breakthrough and can offer nitrte measurement, also in combination with nitrate and COD in a single probe, which correlates perfectly with reference methods.

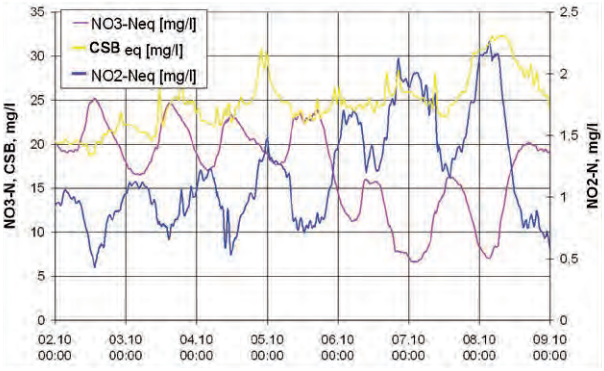
This establishes fundamentally new views both for treatment plant control removing nutrients, for ecologists in monitoring of the emission situation, and for the fish industry controlling nitrite levels in basins.

For the first time, the combination of COD or TOC, nitrate and nitrite in a single probe for the operation and control of a treatment plant (see adjacent diagram) allows a detailed interpretation of the nutrient removal process.

Conventional Solutions

NO_2-N

Until recently nitrite was measured almost exclusively by labor colorimetric methods using analyzer cabinets. The disadvantages already mentioned (mechanical sampling, reagent consumption, maintenance effort, environmental pollution, costs etc.) in principle also apply to nitrite analyzers. Therefor this effort and expense on measuring nitrite has not been widely used up to date although many applications would benefit from the availability of this parameter.



The ammo::lyser™ is a third generation ion-selective (ISE) probe.

It is not only the NH_4 in aqueous solution measured, also the potassium concentration and the pH value allowing most interferences to be eliminated in a concentration range between 0.1 to 1,000 mg/l.

The expected effort and cost of installation, maintenance and consumables is significantly reduced with using the s::can ammo::lyser™. Compared to cabinet analyzers the faster measurement gives a significant advantage in process control (like wastewater aeration

With regard to the controller, software, compressed air cleaning and interfaces, the ammo::lyser™ is fully integrated into s::can measuring systems, so it can be simply connected to existing s::can systems and directly start measuring .

The ammo::lyser™ has several core distinguishing features compared with the ISE ammonium probes of other manufacturers.

Free of interference?

The ammo::lyser™ compensates for any interference with the ISE ammonium measurement. The superior features of the ammo::lyser™ are to be found in the use of the most highly-developed membranes and in the utilization of today's most advanced algorithms and calibration methods.

Ammonium is today still often measured with conventional cabinet analysers.

NH_4-N

The disadvantages already mentioned (mechanical sampling, reagent consumption, maintenance effort, environmental pollution, costs etc.) in principle also apply to ammonium analyzers.

Following the great success of the s::can ammo::lyser™, users worldwide have once more found confidence in ISE technology. In 2007 more than 100 sewage works were equipped in England alone. As a result, other manufacturers have recently produced ISE probes which show similarities with the s::can ammo::lyser™ in some cases.

The s::can Solution

Factory calibration?

With the introduction of innovative calibration methods and new chemometric models as well as with the storage of all data and models equipped, the ammo::lyser™, previously unattainable precise and accurate measurements ex-factory have become possible without initial calibration.

Precise and accurate enough, even for compliance monitoring and fresh waters ?

The measurement performance of the ammo::lyser™ is unbeaten in all areas of applications, but in particular in applications with both low ammonium concentrations and high relative potassium content. Used in nutrient removal control on WWTPs, compliance monitoring in WWTP effluents up to monitoring of fresh water bodies, the s::can ammo::lyser™ persuades in all comparison tests up to date !

Cleaning/rinsing integrated?

Connect to the local compressed air source and it's done. The proven automatic compressed air cleaning is always integrated ex-works.

Lowest operating costs?

In the aeration tank you normally only need to change the NH4 membrane once or twice a year. In WWTP effluents – for compliance monitoring - and in fresh waters the exchange might be wanted slightly more frequently. s::can even offers to refurbish electrodes once, which lowers operating costs drastically. Just send us your electrodes!

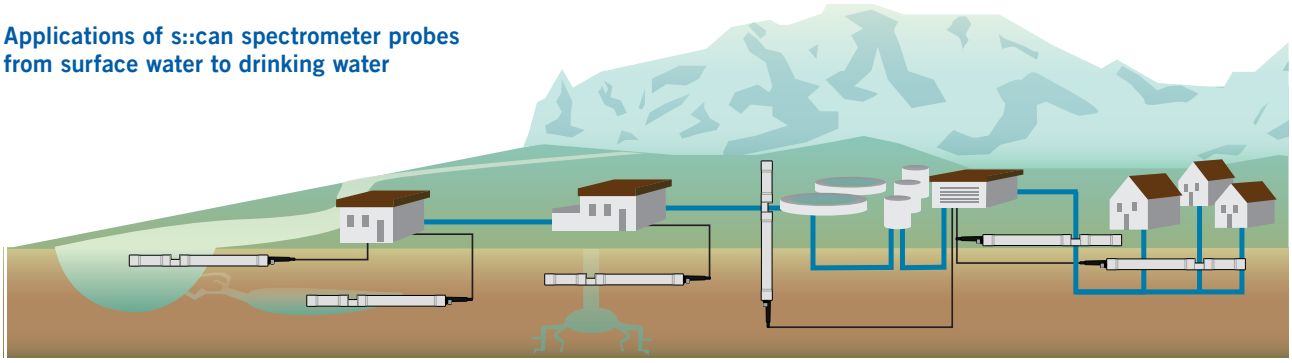
Conventional Solutions

Most other ISE instruments on the market must be calibrated for initialization or "adjusted to the medium". Further this procedure has to be repeated significantly more often in operation than with the ammo::lyser™.

ISE instruments other than the ammo::lyser™ have till now not been successful in the difficult concentration range below 1 mg/l. Apart from probably the best membranes on the market we also offer you the experience in applications requiring this low concentration range to keep the measurements stable over long periods . Further we offer you automatic cleaning systems to keep the probe always working stable.

With other instruments on the market, once you have discovered that the membrane is worn out you must replace the entire cartridge system, containing all the electrodes. As a result the annual costs are several times those of the ammo:lyser™.

Applications of s::can spectrometer probes from surface water to drinking water



River monitoring

- Alarm systems
- Early warning system
- Turbidity
- UV254 (280, 436 etc.)
- TOC
- DOC
- NO3-N
- Hydrocarbons
- NH4-N
- pH
- EC
- ORP
- O2

Monitoring of bank filtration

- Filter efficiency
- Monitoring of turbidity incl. colloids
- Alarms at specific and nonspecific exceedance
- Turbidity
- TOC
- DOC
- NO3-N
- Hydrocarbons
- NH4-N
- pH
- EC
- O2

Spring monitoring

- General suitability for drinking water
- Turbidity
- Alarms
- TOC
- DOC
- NO3-N
- Hydrocarbons
- NH4-N
- H2S
- pH
- EC
- O2
- BTX
- NO2-N

Monitoring, operation and control of the treatment plant

- Turbidity
- TOC
- DOC
- Ozone
- Change of OC at Oxidation
- Oxidation-products
- Filter efficiency
- Flocculants / turb. / OC
- NO3-N
- Various single substances
- Spectral tracing
- NH4-N
- F-
- Free Chlorine
- pH
- ORP

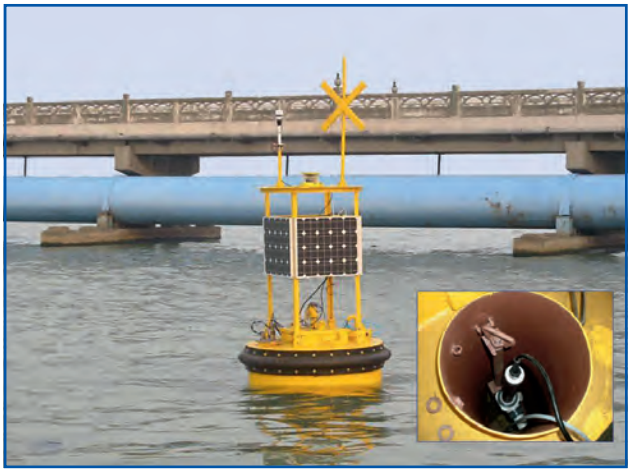
Monitoring of distribution network

- TOC
- DOC
- NO3
- Turbidity
- Hygienical risk
- Single substance alarm
- UV254
- Free Chlorine
- O2

s::can
A Badger Meter® Brand

Spectrometer Probes

spectro::lyser



carbo::lyser installed in a buoy

Spectrometer Probes

"Why do we measure"

To quantify the concentration of organic substances in drinking water and natural waters usually sum parameters such as TOC, DOC or SAC are used. These sum parameters can be used because the total organics is composed of a multitude of substances.

As organic substances are on the one hand a source of food for micro-organisms and on the other hand they can be harmful themselves, their removal is an essential step in water treatment. The s::can carbo::lyser™ is used to continuously monitor the individual processes, such as adsorption and flocculation, used for removal of natural organics. Furthermore, the instrument is used in online alarm systems to monitor the drinking water distribution network. Typically, in both applications the turbidity, also provided by the carbo::lyser™, is used as an additional principal indicator for water quality.

The spectro::lyser™, which can measure the entire absorption spectrum, is used by many drinking water utilities worldwide as a pivotal component in their raw water monitoring. The spectro::lyser™ its capability to measure and analyse the absorption spectrum in its entirety allows the detection of a multitude of organic substances, and provide the best possible drinking water security when used to control ground, source and surface waters.

The benefits of using a spectro::lyser™ or multi::lyser™ are even higher as the much greater information content of the data provided by these instruments: two different fractions of the organics can be distinguished (TOC, DOC) and simultaneously the levels of turbidity, nitrate and colour can be determined in a single measurement.

In ground water high nitrate concentrations are the primary source of public health risks. When producing drinking water from such sources it is necessary to reduce the nitrate concentration in the water. Here the nitro::lyser™ is used both in the control of such processes (for example mixing of water from different sources or insitu nitrate removal) and in the monitoring of the raw water quality.

The spectro::lyser™ can go one step further and resolve nitrate and nitrite concentrations separately. As nitrite is extremely toxic for most aquatic organisms, this feature of the spectro::lyser™ allows the real-time detection of conditions that endanger the ecosystems in surface waters.

The spectrum of applications of the spectro::lyser™ in drinking water and natural waters is completed by online measurements of ozone (disinfection of drinking water), hydrogen sulphide (anoxic raw waters), disinfection by-product formation (drinking water) and single substances (for example benzene, toluene, xylene) in customer specific applications (e.g. contaminated ground water).

The use of "delta spectroscopy", the capability to determine many parameters simultaneously and the use of the spectral alarm software ana::larm makes the spectro::lyser™ an ideal tool for drinking water protection. As pivotal monitoring instrument in water quality stations the spectro::lyser™ detects potential threats to drinking water quality and security in real time.

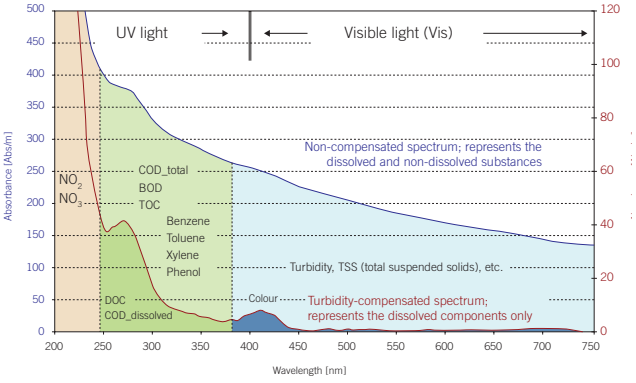


fig. 1 : "fingerprint" absorption spectra

Spectrometer Probes

"How do we measure"

All s::can spectrometer probes are multi-parameter instruments that can measure multiple water quality parameters continuously (OnLine) and directly in the water without the need for complex and maintenance intensive sample pre-treatment.

The most important versions of the spectrometer probe are the nitro::lyser™ (nitrate and turbidity/solids), the uv::lyser (UV254 and turbidity/solids), the carbo::lyser™ (COD/TOC/UV254/DOC and turbidity/solids), the multi::lyser™ (nitrate and COD/TOC/UV254/DOC and turbidity/solids) and the versatile spectro::lyser™ (nitrate, solids/turbidity, total and dissolved organics).

As all s::can instruments the spectrometer probes can be operated according to the "plug & measure" principle. With a simple plug connection, which provides power supply and data communication, the s::can sensors are connected to an s::can terminal and are ready for use. All s::can spectrometer probes are pre-calibrated ex works - specific Global Calibrations are available for a large number of standardised applications. The "plug & measure" principle avoids complex installation procedures on site and thus does not only save time during initial operation, but also reduces avoidable errors.

The highly optimised design completely eliminates all moving parts in contact with the water as well as consumables. This reduces failures, spare part costs and maintenance dramatically. For s::can spectrometer probes we guarantee replacement of spare parts free of charge for the first three years after delivery (upon presenting the guarantee card).

Using standardised mounting devices s::can spectrometer probes can be installed quickly and effortlessly, either submersed (InSitu) or in a flow through setup (Bypass, monitoring station).

s::can spectrometer probes utilise an automatic cleaning system that uses compressed air for removal of fouling. This system has proven highly efficient and reliable, even in untreated wastewater. Because of this, regular manual cleaning of the optical windows is not required, thus significantly reducing maintenance for the operator.

Like all other s::can instruments the s::can spectrometer probes are intelligent instruments - using software controlled procedures it is even possible to identify any fouling on the measuring windows.

The s::can spectrometer instruments are fully capable spectrometers in the shape of a probe. In the measuring section, which is positioned between emitting and receiving units, the emitted light passes through the medium to be analysed. Substances present in the medium located in between the measuring windows of the probe adsorb visible and UV light. Internally a second light beam is guided across a comparison pathway. This two beam setup (see figure 2) makes it possible to compensate, with each single measurement, any instrumental effects that could influence the quality of the measurement (e.g. ageing of the light source).

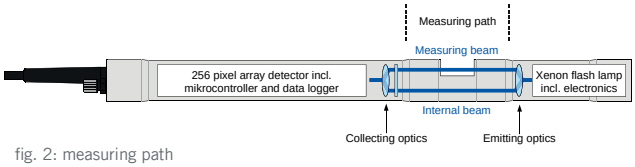


fig. 2: measuring path

s::can spectrometer probes record the complete absorbance spectrum between 190 and 720 nm (UV-Vis) or 190 - 390 nm (UV) resolving it into 256 wavelengths - the result is the "Fingerprint" (absorbance spectrum, see figure 1). Using the information contained in the fingerprint it is possible to monitor multiple parameters simultaneously and at the same time compensate these parameters for possible cross-sensitivities. The correlation with laboratory results reaches a quality that was unknown from the previously used simple optical instruments. Global Calibrations calculate the concentrations of multiple parameters from the Fingerprint and are available as application specific factory settings. Through the Global Calibrations each user benefits from many years of experience in applications similar to his own - in most cases no local calibration on site is required.

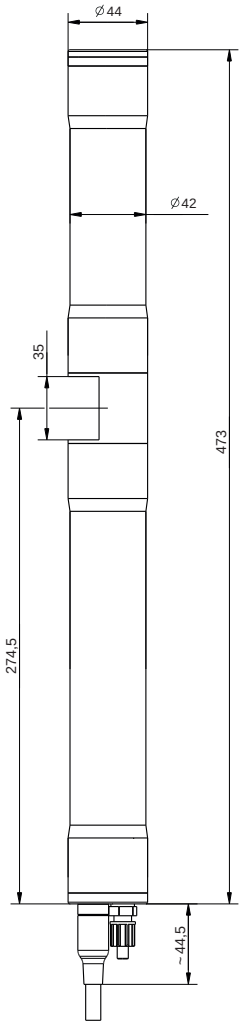
s::can spectrometer probes use no replaceable parts or consumables. Therefore, when operated properly there will be no costs for spare parts at all.

Its unrivalled measurement features in combination with the lowest possible total costs - initial cost and foreseeable operational costs - make the s::can spectrometer probe the most attractive solution available today.

spectro::lyser V3

spectro::lyser® UV-Vis monitors depending on the application an individual selection of: TSS, TS, turbidity, color, TOC, DOC, BOD, COD, NO_3-N, NO_3, HS-, O_3, CLD, UV254, fingerprints, spectral alarms and temperature

- measuring principle: UV-Vis spectrometry over the total range (190-750 nm)
- web server on board - IoT enabled, no user software is needed to configure the probe
- communicates directly with your mobile device via WLAN
- 8 GB onboard memory - capacity for logging data for many years
- improved optical performance - revolutionary precision
- fast measurement interval - every 30 seconds possible
- extremely power efficient - sleep mode for low energy consumption
- multiparameter probe with 1 mm, 5 mm or 35 mm optical path length, ideal for waste water, surface water and drinking water
- long term stable and maintenance free in operation
- factory precalibrated, local multi-point calibration possible
- automatic cleaning with compressed air or brush



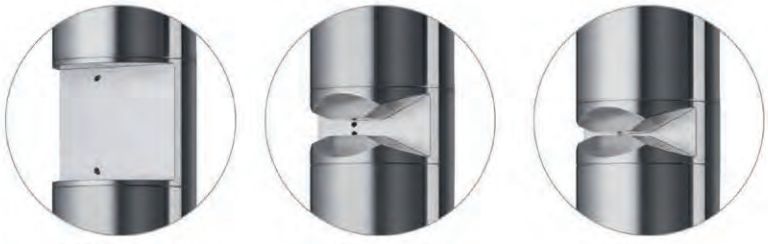
recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
B-33-012	con::nect V3
B-32-xxx	s::can compressor
B-44 B-44-2	cleaning valve
C-32-V3	Adapter cable to connect a V3 spectrometer (M12) to V2 Terminal (MIL Plug)
F-110-V3	carrier s::can spectrometer V3 & V2 probe, 45°
F-120-V3	carrier s::can spectrometer V3 & V2 probe, vertical attachment
F-446-V3	flow cell AutoBrush, POM-C (for spectrometer V3 & V2 pathlength 35 mm)
S-11-xx-moni	moni::tool Software
F-146-rs-x	ruck::sack (submersible Autobrush)

technical specification	
measuring principle	UV-Vis spectrometry 200 - 750 nm
measuring principle detail	xenon flash lamp, pixel array detector
measurement interval	30 sec (configurable, depending on application)
automatic compensation instrument	real dual beam measurement for compensation and detailed diagnostics
automatic compensation cross sensitivities	turbidity / solids / organic substances
precalibrated ex-works	all parameters
accuracy standard solution (>1 mg/l)	NO_3-N: +/- 2% +1/OPL[mg/l]* COD-KHP: +/-2% +10/OPL[mg/l]* (* OPL ... optical pathlength in mm)
access to raw signals	access to spectral information
reference standard	distilled water
onboard memory	8 GB
integrated temperature sensor	0 ... 45 °C
resolution temperature sensor	0.1 °C
integration via	con::cube V3 con::nect V3 con::lyte V5 (D-320-pro2) and adapter cable (C-32-V3)
power supply	10 ... 18 VDC
power consumption (typical)	3 W
power consumption (sleep model)	60 mW
power consumption (max.)	20 W
interface to s::can terminals	M12 RSTS 8Y (IP67), RS485, Ethernet
interface to third party terminals	con::nect V3 incl. Modbus RTU, REST API, Modbus TCP/IP
digital interface (for cleaning devices)	1 digital in/out 1 digital out
internal sensors	supply voltage sensor, tilt sensor, rotation sensor

network connection	100Base-T Ethernet, WLAN
status information	RGB LED ring
cable length	1 m fixed cable (-010) or 7.5 m fixed cable (-075) or 15 m fixed cable (-150)
cable type	PU jacket
housing material	stainless steel 1.4404 (optional titanium)
window material	optical path length 5 and 1 mm: sapphire optical path length 35 mm: fused silica (UV-grade)
weight (min.)	3.4 kg (incl. cable)
dimensions (Ø x l)	optical path length 35 mm: 44 x 473 mm / 517.5 mm optical path length 5 mm: 44 x 457 mm / 501.5 mm optical path length 1 mm: 44 x 453 mm / 497.5 mm
operating temperature	0 ... 50 °C
operating pressure	0 ... 3 bar
installation / mounting	submersed or in a flow cell
flow velocity	3 m/s (max.)
mechanical stability	30 Nm
ingress protection class	IP68
automatic cleaning	media: compressed air or autobrush permissible pressure: 3 ... 6 bar
storage temperature	-10 ... 65 °C
conformity - environmental testing	EN 60721-3
conformity - EMC	EN 61326-1
conformity - RoHS 2	EN 50581
standard guarantee	1 years
extended guarantee (optional)	3 years

The perfect accuracy for every application

The spectro::lyser V3 is available with three different optical path lengths.



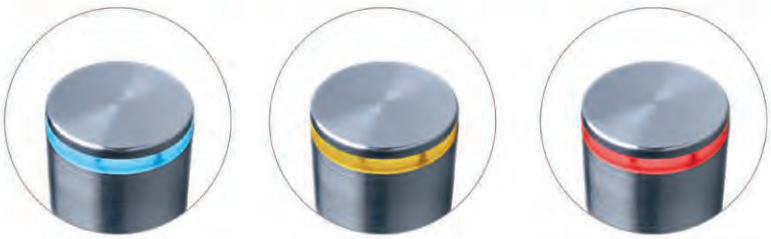
drinking water: 35 mm

surface water: 5 mm

waste water: 1 mm

Optical information ring

The color of the optical information ring signals the state of the sensor.



everything okay

sensor in service mode

parameter or device error

Wireless communication - Io::Tool

Intuitive web interface for data visualization and configuration of the spectro::lyser V3.

ground water

		parameter										
		turbidity [NTU/FTU]	color (app) [Hazen]	color (tru) [Hazen]	TOC [mg/l]	DOC [mg/l]	NO_3 [mg/l]	UV254 [Abs/m]	UV254 f [Abs/m]	BTX [mg/l]	H_2S [mg/l]	part number
spectro::lyser™ V3 (35 mm OPL, UV-Vis)	min.	0	0	0	0	0	0	0	0	0	0	SP3-1-35-NO-xxx
	max.	170	500	300	20	15	88	71	60	51	5	

surface water

		parameter															
		TSS [mg/l]	turbidity [NTU/FTU]	color (app) [Hazen]	color (tru) [Hazen]	TOC [mg/l]	DOC [mg/l]	BOD [mg/l]	COD [mg/l]	COD f [mg/l]	NO_3 [mg/l]	HS- [mg/l]	Chl-a [µg/l]	UV254 [Abs/m]	UV254 f [Abs/m]	BTX [mg/l]	part number
spectro::lyser™ V3 (35 mm OPL, UV-Vis)	min.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	SP3-1-35-NO-xxx
	max.	170	200	500	300	30	25	42	71	42	66	5	100	71	60	51	
spectro::lyser™ V3 (5 mm OPL, UV-Vis)	min.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	SP3-1-05-NO-xxx
	max.	1200	1400	3500	2100	210	180	300	500	300	460	35	700	500	420	360	

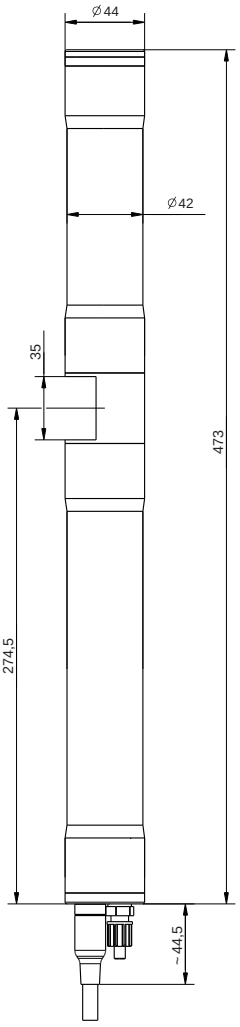
drinking water

		parameter											
		turbidity [NTU/FTU]	color (app) [Hazen]	color (tru) [Hazen]	TOC [mg/l]	DOC [mg/l]	NO_3 [mg/l]	chloramine [mg/l]	O_3 [mg/l]	CLD [mg/l]	UV254 [Abs/m]	UV254 f [Abs/m]	part number
spectro::lyser™ V3 (35 mm OPL, UV-Vis)	min.	0	0	0	0	0	0	0	0	0	0	0	SP3-1-35-NO-xxx
	max.	170	500	300	22	17	88	42	25	22	71	60	

spectro::lyser V3 (UV)

spectro::lyser® V3 UV monitors depending on the application an individual selection of: NO_2-N, TSS (est), turbidity (est), NO_3-N, COD, TOC, UV254, BTX, fingerprints and spectral alarms and temperature

- measuring principle: UV spectrometry over the total range (200-390 nm)
- web server on board - IoT enabled, no user software is needed to configure the probe
- communicates directly with your mobile device via WLAN
- 8 GB onboard memory - capacity for logging data for many years
- improved optical performance - revolutionary precision
- fast measurement interval - every 30 seconds possible
- extremely power efficient - sleep mode for low energy consumption
- multiparameter probe with 1 mm, 5 mm or 35 mm optical path length, ideal for waste water, surface water and drinking water
- long term stable and maintenance free in operation
- factory precalibrated, local multi-point calibration possible
- automatic cleaning with compressed air or brush
- simple web interface for visualization & operation - Io::Tool



recommended accessories	
part number	**article name**
D-500-012	con::line
D-330-xxx	con::cube V3
B-33-012	con::nect V3
B-32-xxx	s::can compressor
B-44 B-44-2	cleaning valve
C-32-V3	Adapter cable to connect a V3 spectrometer (M12) to V2 Terminal (MIL Plug)
F-110-V3	carrier s::can spectrometer V3 & V2 probe, 45°
F-120-V3	carrier s::can spectrometer V3 & V2 probe, vertical attachment
F-446-V3	flow cell AutoBrush, POM-C (for spectrometer V3 & V2 pathlength 35 mm)
S-11-xx-moni	moni::tool Software
F-146-rs-x	ruck::sack (submersible Autobrush)

technical specification

measuring principle	UV spectrometry (200 - 390 nm)
automatic compensation instrument	real dual beam measurement for compensation and detailed diagnostics
automatic compensation cross sensitivities	solids / organic substances
precalibrated ex-works	all parameters
accuracy standard solution (>1 mg/l)	NO_3-N: +/- 2% +1/OPL[mg/l]* COD-KHP: +/-2% +10/OPL[mg/l]* (* OPL ... optical pathlength in mm)
access to raw signals	access to spectral information
reference standard	distilled water
onboard memory	8 GB
integrated temperature sensor	0 ... 45 °C
resolution temperature sensor	0.1 °C
integration via	con::cube V3 con::nect V3 con::lyte V5 (D-320-pro2) and adapter cable (C-32-V3) con::line
power supply	10 ... 18 VDC
power consumption (typical)	3 W
power consumption (sleep model)	60 mW
power consumption (max.)	20 W
interface to s::can terminals	M12 RSTS 8Y (IP67), RS485, Ethernet
interface to third party terminals	con::nect V3 incl. Modbus RTU, REST API, Modbus TCP/IP
digital interface (for cleaning devices)	1 digital in/out 1 digital out
internal sensors	supply voltage sensor, tilt sensor, rotation sensor

network connection	100Base-T Ethernet, WLAN
status information	RGB LED ring
cable length	1 m fixed cable (-010) or 7.5 m fixed cable (-075) or 15 m fixed cable (-150)
cable type	PU jacket
housing material	stainless steel 1.4404
window material	optical path length 5 and 1 mm: sapphire optical path length 35 mm: fused silica (UV-grade)
weight (min.)	3.4 kg (incl. cable)
dimensions (Ø x l)	optical path length 35 mm: 44 x 473 mm / 517.5 mm optical path length 5 mm: 44 x 457 mm / 501.5 mm optical path length 1 mm: 44 x 453 mm / 497.5 mm
operating temperature	0 ... 45 °C
operating pressure	0 ... 3 bar
installation / mounting	submersed or in a flow cell
flow velocity	3 m/s (max.)
mechanical stability	30 Nm
ingress protection class	IP68
automatic cleaning	media: compressed air or autobrush permissible pressure: 3 ... 6 bar
storage temperature	-10 ... 65 °C
conformity - environmental testing	EN 60721-3
conformity - EMC	EN 61326-1
conformity - RoHS 2	EN 50581
standard guarantee	1 year
extended guarantee (optional)	3 years

ground water

		parameter					
		turbidity est [NTU/FTU]	TOC [mg/l]	NO_2-N [mg/l]	NO_3-N [mg/l]	UV254 [Abs/m]	part number
spectro::lyser V3 UV (35 mm OPL)	min.	0	0	0	0	0	SP3-2-35-NO-xxx
	max.	60	25	5.7	15	70	

surface water

		parameter					
		turbidity est [NTU/FTU]	TOC [mg/l]	NO_2-N [mg/l]	NO_3-N [mg/l]	UV254 [Abs/m]	part number
spectro::lyser V3 UV (05 mm OPL)	min.	0	0	0	0	0	SP3-2-05-NO-xxx
	max.	500	180	40	105	500	
spectro::lyser V3 UV (35 mm OPL)	min.	0	0	0	0	0	SP3-2-35-NO-xxx
	max.	70	25	5.7	15	70	

drinking water

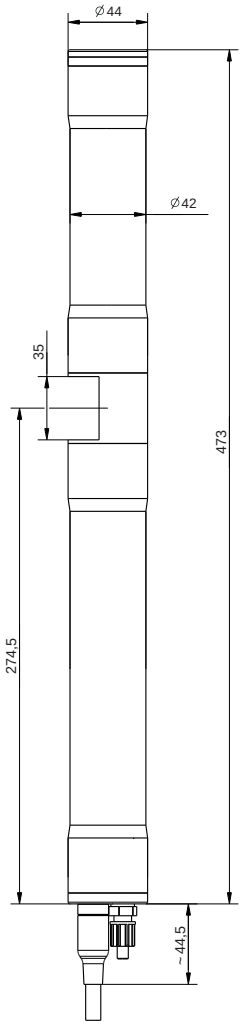
		parameter						
		turbidity est [NTU/FTU]	TOC [mg/l]	NO_2-N [mg/l]	NO_3-N [mg/l]	chloramine [mg/l]	UV254 [Abs/m]	part number
spectro::lyser V3 UV (35 mm OPL)	min.	0	0	0	0	0	0	SP3-2-35-NO-xxx
	max.	60	22	5.7	15	22	70	

carbo::lyser™ II / III - V3

carbo::lyser™ II monitors 2 of the following parameters: TSS, Turbidity, TOC, DOC, BOD, COD, COD f, UV254 and UV254 f

carbo::lyser™ III monitors 3 of the follwing parameters: TSS, Turbidity, TOC, DOC, BOD, COD, COD f, UV254 and UV254 f

- measuring principle: UV-Vis spectrometry over the total range (190-750 nm)
- web server on board - IoT enabled, no user software is needed to configure the probe
- communicates directly with your mobile device via WLAN
- 8 GB onboard memory - capacity for logging data for many years
- improved optical performance - revolutionary precision
- fast measurement interval - every 30 seconds possible
- extremely power efficient - sleep mode for low energy consumption
- multiparameter probe with 1 mm, 5 mm or 35 mm optical path length, ideal for waste water, surface water and drinking water
- long term stable and maintenance free in operation
- factory precalibrated, local multi-point calibration possible
- automatic cleaning with compressed air or brush



recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-pro2-230	con::lyte pro
B-33-012	con::nect V3
B-32-xxx	s::can compressor
B-44 B-44-2	cleaning valve
C-32-V3	Adapter cable to connect a V3 spectrometer (M12) to V2 Terminal (MIL Plug)
F-110-V3	carrier s::can spectrometer V3 & V2 probe, 45°
F-120-V3	carrier s::can spectrometer V3 & V2 probe, vertical attachment
F-446-V3	flow cell AutoBrush, POM-C (for spectrometer V3 & V2 pathlength 35 mm)
S-11-xx-moni	moni::tool Software
F-146-rs-x	ruck::sack (submersible Autobrush)

technical specification

measuring principle	UV-Vis spectrometry 200 - 750 nm
measurement interval	30 sec (configurable, depending on application)
automatic compensation cross sensitivities	turbidity / solids / organic substances
precalibrated ex-works	all parameters
accuracy standard solution (>1 mg/l)	NO_3-N: +/- 3% +1/OPL[mg/l]* COD-KHP: +/-3% +10/OPL[mg/l]* (* OPL ... optical pathlength in mm)
access to raw signals	no
reference standard	distilled water
onboard memory	8 GB
integrated temperature sensor	0 ... 45 °C
resolution temperature sensor	0.1 °C
integration via	con::cube V3 con::nect V3 con::lyte V5 (D-320-pro2) and adapter cable (C-32-V3)
power supply	10 ... 18 VDC
power consumption (typical)	3 W
power consumption (sleep model)	60 mW
power consumption (max.)	20 W
interface to s::can terminals	M12 RSTS 8Y (IP67), RS485, Ethernet
interface to third party terminals	con::nect V3 incl. Modbus RTU, REST API, Modbus TCP/IP
digital interface (for cleaning devices)	1 digital in/out 1 digital out
internal sensors	supply voltage sensor, tilt sensor, rotation sensor
network connection	100Base-T Ethernet, WLAN
status information	RGB LED ring

cable length	1 m fixed cable (-010) or 7.5 m fixed cable (-075) or 15 m fixed cable (-150)
cable type	PU jacket
housing material	stainless steel 1.4404 (optional titanium)
window material	optical path length 5 and 1 mm: sapphire optical path length 35 mm: fused silica (UV-grade)
weight (min.)	3.4 kg (incl. cable)
dimensions (Ø x l)	optical path length 35 mm: 44 x 473 mm / 517.5 mm optical path length 5 mm: 44 x 457 mm / 501.5 mm optical path length 1 mm: 44 x 453 mm / 497.5 mm
operating temperature	0 ... 50 °C
operating pressure	0 ... 5 bar
high pressure specification (optional)	10 bar
installation / mounting	submersed or in a flow cell
flow velocity	3 m/s (max.)
mechanical stability	30 Nm
ingress protection class	IP68
automatic cleaning	media: compressed air or autobrush permissible pressure: 3 ... 6 bar
storage temperature	-10 ... 65 °C
conformity - environmental testing	EN 60721-3
conformity - EMC	EN 61326-1
conformity - RoHS 2	EN 50581
standard guarantee	1 years
extended guarantee (optional)	3 years

surface water

		parameter									
		TSS [mg/l]	turbidity [NTU/FTU]	TOC [mg/l]	DOC [mg/l]	BOD [mg/l]	COD [mg/l]	COD f [mg/l]	UV254 [Abs/m]	UV254 f [Abs/m]	part number
carbo::lyser™ II (2 parameters, 5 mm OPL)	min.	0	0	0	0	0	0	0	0	0	G3-C2-R-05-NO-xxx
	max.	1200	1400	210	180	300	500	300	500	420	
carbo::lyser™ III (3 parameters, 5 mm OPL)	min.	0	0	0	0	0	0	0	0	0	G3-C3-R-05-NO-xxx
	max.	1200	1400	210	180	300	500	300	500	420	

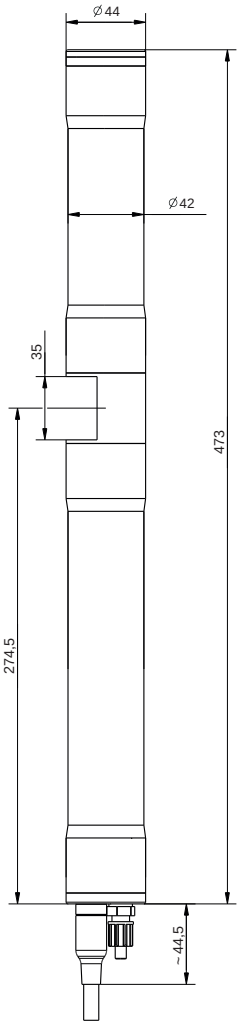
drinking water

		parameter					
		turbidity [NTU/FTU]	TOC [mg/l]	DOC [mg/l]	UV254 [Abs/m]	UV254 f [Abs/m]	part number
carbo::lyser™ II (2 parameters, 35 mm OPL)	min.	0	0	0	0	0	G3-C2-D-35-NO-xxx
	max.	170	22	17	71	60	
carbo::lyser™ III (3 parameters, 35 mm OPL)	min.	0	0	0	0	0	G3-C3-D-35-NO-xxx
	max.	170	22	17	71	60	

multi::lyser™ IV - V3

multi::lyser™ IV monitors 4 of the following parameters: TSS, Turbidity, TOC, DOC, BOD, COD, COD f, NO3, UV254 and UV254 f

- measuring principle: UV-Vis spectrometry over the total range (190-750 nm)
- web server on board - IoT enabled, no user software is needed to configure the probe
- communicates directly with your mobile device via WLAN
- 8 GB onboard memory - capacity for logging data for many years
- improved optical performance - revolutionary precision
- fast measurement interval - every 30 seconds possible
- extremely power efficient - sleep mode for low energy consumption
- multiparameter probe with 1 mm, 5 mm or 35 mm optical path length, ideal for waste water, surface water and drinking water
- long term stable and maintenance free in operation
- factory precalibrated, local multi-point calibration possible
- automatic cleaning with compressed air or brush



recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-pro2-230	con::lyte pro
B-33-012	con::nect V3
B-32-xxx	s::can compressor
B-44 B-44-2	cleaning valve
C-32-V3	Adapter cable to connect a V3 spectrometer (M12) to V2 Terminal (MIL Plug)
F-110-V3	carrier s::can spectrometer V3 & V2 probe, 45°
F-120-V3	carrier s::can spectrometer V3 & V2 probe, vertical attachment
F-446-V3	flow cell AutoBrush, POM-C (for spectrometer V3 & V2 pathlength 35 mm)
S-11-xx-moni	moni::tool Software
F-146-rs-x	ruck::sack (submersible Autobrush)

technical specification

measuring principle	UV-Vis spectrometry 200 - 750 nm
measurement interval	30 sec (configurable, depending on application)
automatic compensation cross sensitivities	turbidity / solids / organic substances
precalibrated ex-works	all parameters
accuracy standard solution (>1 mg/l)	NO_3-N: +/- 3% +1/OPL[mg/l]* COD-KHP: +/-3% +10/OPL[mg/l]* (* OPL ... optical pathlength in mm)
access to raw signals	no
reference standard	distilled water
onboard memory	8 GB
integrated temperature sensor	0 ... 45 °C
resolution temperature sensor	0.1 °C
integration via	con::cube V3 con::nect V3 con::lyte V5 (D-320-pro2) and adapter cable (C-32-V3)
power supply	10 ... 18 VDC
power consumption (typical)	3 W
power consumption (sleep model)	60 mW
power consumption (max.)	20 W
interface to s::can terminals	M12 RSTS 8Y (IP67), RS485, Ethernet
interface to third party terminals	con::nect V3 incl. Modbus RTU, REST API, Modbus TCP/IP
digital interface (for cleaning devices)	1 digital in/out 1 digital out
internal sensors	supply voltage sensor, tilt sensor, rotation sensor
network connection	100Base-T Ethernet, WLAN
status information	RGB LED ring

cable length	1 m fixed cable (-010) or 7.5 m fixed cable (-075) or 15 m fixed cable (-150)
cable type	PU jacket
housing material	stainless steel 1.4404 (optional titanium)
window material	optical path length 5 and 1 mm: sapphire optical path length 35 mm: fused silica (UV-grade)
weight (min.)	3.4 kg (incl. cable)
dimensions (Ø x l)	optical path length 35 mm: 44 x 473 mm / 517.5 mm optical path length 5 mm: 44 x 457 mm / 501.5 mm optical path length 1 mm: 44 x 453 mm / 497.5 mm
operating temperature	0 ... 50 °C
operating pressure	0 ... 5 bar
high pressure specification (optional)	10 bar
installation / mounting	submersed or in a flow cell
flow velocity	3 m/s (max.)
mechanical stability	30 Nm
ingress protection class	IP68
automatic cleaning	media: compressed air or autobrush permissible pressure: 3 ... 6 bar
storage temperature	-10 ... 65 °C
conformity - environmental testing	EN 60721-3
conformity - EMC	EN 61326-1
conformity - RoHS 2	EN 50581
standard guarantee	1 years
extended guarantee (optional)	3 years

surface water

		parameter											
		TSS [mg/l]	turbidity [NTU/FTU]	TOC [mg/l]	DOC [mg/l]	BOD [mg/l]	COD [mg/l]	COD f [mg/l]	NO_3-N [mg/l]	NO_3 [mg/l]	UV254 [Abs/m]	UV254 f [Abs/m]	part number
multi::lyser™ IV (4 parameters, 5 mm OPL)	min.	0	0	0	0	0	0	0	0	0	0	0	G3-M4-R-05-NO-xxx
	max.	1200	1400	210	180	300	500	300	100	460	500	420	

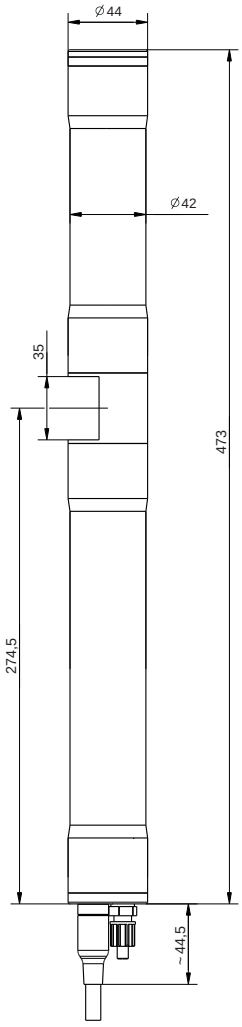
drinking water

		parameter							
		turbidity [NTU/FTU]	TOC [mg/l]	DOC [mg/l]	NO_3-N [mg/l]	NO_3 [mg/l]	UV254 [Abs/m]	UV254 f [Abs/m]	part number
multi::lyser™ IV (4 parameters, 35 mm OPL)	min.	0	0	0	0	0	0	0	G3-M4-D-35-NO-xxx
	max.	170	22	17	20	88	71	60	

nitro::lyser™ II - V3

nitro::lyser™ II monitors 2 of the following parameters: Turbidity, NO_3-N and NO_3

- measuring principle: UV-Vis spectrometry over the total range (190-750 nm)
- web server on board - IoT enabled, no user software is needed to configure the probe
- communicates directly with your mobile device via WLAN
- 8 GB onboard memory - capacity for logging data for many years
- improved optical performance - revolutionary precision
- fast measurement interval - every 30 seconds possible
- extremely power efficient - sleep mode for low energy consumption
- multiparameter probe with 1 mm, 5 mm or 35 mm optical path length, ideal for waste water, surface water and drinking water
- long term stable and maintenance free in operation
- factory precalibrated, local multi-point calibration possible
- automatic cleaning with compressed air or brush



recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-pro2-230	con::lyte pro
B-33-012	con::nect V3
B-32-xxx	s::can compressor
B-44 B-44-2	cleaning valve
C-32-V3	Adapter cable to connect a V3 spectrometer (M12) to V2 Terminal (MIL Plug)
F-110-V3	carrier s::can spectrometer V3 & V2 probe, 45°
F-120-V3	carrier s::can spectrometer V3 & V2 probe, vertical attachment
F-446-V3	flow cell AutoBrush, POM-C (for spectrometer V3 & V2 pathlength 35 mm)
S-11-xx-moni	moni::tool Software
F-146-rs-x	ruck::sack (submersible Autobrush)

technical specification

measuring principle	UV-Vis spectrometry 200 - 750 nm
measurement interval	30 sec (configurable, depending on application)
automatic compensation cross sensitivities	turbidity / solids / organic substances
precalibrated ex-works	all parameters
accuracy standard solution (>1 mg/l)	NO_3-N: +/- 3% +1/OPL[mg/l]* COD-KHP: +/-3% +10/OPL[mg/l]* (* OPL ... optical pathlength in mm)
access to raw signals	no
reference standard	distilled water
onboard memory	8 GB
integrated temperature sensor	0 ... 45 °C
resolution temperature sensor	0.1 °C
integration via	con::cube V3 con::nect V3 con::lyte V5 (D-320-pro2) and adapter cable (C-32-V3)
power supply	10 ... 18 VDC
power consumption (typical)	3 W
power consumption (sleep model)	60 mW
power consumption (max.)	20 W
interface to s::can terminals	M12 RSTS 8Y (IP67), RS485, Ethernet
interface to third party terminals	con::nect V3 incl. Modbus RTU, REST API, Modbus TCP/IP
digital interface (for cleaning devices)	1 digital in/out 1 digital out
internal sensors	supply voltage sensor, tilt sensor, rotation sensor
status information	RGB LED ring

cable length	1 m fixed cable (-010) or 7.5 m fixed cable (-075) or 15 m fixed cable (-150)
cable type	PU jacket
housing material	stainless steel 1.4404 (optional titanium)
window material	optical path length 5 and 1 mm: sapphire optical path length 35 mm: fused silica (UV-grade)
weight (min.)	3.4 kg (incl. cable)
dimensions (Ø x l)	optical path length 35 mm: 44 x 473 mm / 517.5 mm optical path length 5 mm: 44 x 457 mm / 501.5 mm optical path length 1 mm: 44 x 453 mm / 497.5 mm
operating temperature	0 ... 50 °C
operating pressure	0 ... 5 bar
high pressure specification (optional)	10 bar
installation / mounting	submersed or in a flow cell
flow velocity	3 m/s (max.)
mechanical stability	30 Nm
ingress protection class	IP68
automatic cleaning	media: compressed air or autobrush permissible pressure: 3 ... 6 bar
storage temperature	-10 ... 65 °C
conformity - environmental testing	EN 60721-3
conformity - EMC	EN 61326-1
conformity - RoHS 2	EN 50581
standard guarantee	1 years
extended guarantee (optional)	3 years

surface water

		parameter			
		turbidity [NTU/FTU]	NO_3-N [mg/l]	NO_3 [mg/l]	part number
nitro::lyser™ II (2 parameters, 5 mm OPL)	min.	0	0	0	G3-N2-R-05-NO-xxx
	max.	1400	100	460	

ground water

		parameter			
		turbidity [NTU/FTU]	NO_3-N [mg/l]	NO_3 [mg/l]	part number
nitro::lyser™ II (2 parameters, 35 mm OPL)	min.	0	0	0	G3-N2-G-35-NO-xxx
	max.	170	20	88	

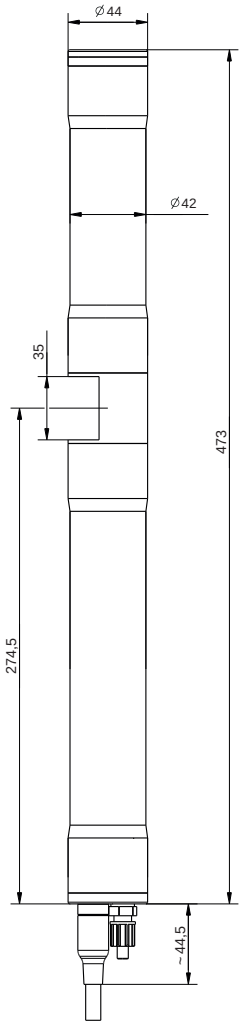
drinking water

		parameter			
		turbidity [NTU/FTU]	NO_3-N [mg/l]	NO_3 [mg/l]	part number
nitro::lyser™ II (2 parameters, 35 mm OPL)	min.	0	0	0	G3-N2-D-35-NO-xxx
	max.	170	20	88	

ozo::lyser II - V3

ozo::lyser II monitors turbidity & ozone

- measuring principle: UV-Vis spectrometry over the total range (190-750 nm)
- web server on board - IoT enabled, no user software is needed to configure the probe
- communicates directly with your mobile device via WLAN
- 8 GB onboard memory - capacity for logging data for many years
- improved optical performance - revolutionary precision
- fast measurement interval - every 30 seconds possible
- extremely power efficient - sleep mode for low energy consumption
- multiparameter probe with 1 mm, 5 mm or 35 mm optical path length, ideal for waste water, surface water and drinking water
- long term stable and maintenance free in operation
- factory precalibrated, local multi-point calibration possible
- automatic cleaning with compressed air or brush



recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-pro2-230	con::lyte pro
B-33-012	con::nect V3
B-32-xxx	s::can compressor
B-44 B-44-2	cleaning valve
C-32-V3	Adapter cable to connect a V3 spectrometer (M12) to V2 Terminal (MIL Plug)
F-110-V3	carrier s::can spectrometer V3 & V2 probe, 45°
F-120-V3	carrier s::can spectrometer V3 & V2 probe, vertical attachment
F-446-V3	flow cell AutoBrush, POM-C (for spectrometer V3 & V2 pathlength 35 mm)
S-11-xx-moni	moni::tool Software
F-146-rs-x	ruck::sack (submersible Autobrush)

technical specification	
measuring principle	UV-Vis spectrometry 200 - 750 nm
measurement interval	30 sec (configurable, depending on application)
automatic compensation cross sensitivities	turbidity / solids / organic substances
precalibrated ex-works	all parameters
accuracy standard solution (>1 mg/l)	NO_3-N: +/- 3% +1/OPL[mg/l]* COD-KHP: +/-3% +10/OPL[mg/l]* (* OPL ... optical pathlength in mm)
access to raw signals	no
reference standard	distilled water
onboard memory	8 GB
integrated temperature sensor	0 ... 45 °C
resolution temperature sensor	0.1 °C
integration via	con::cube V3 con::nect V3 con::lyte V5 (D-320-pro2) and adapter cable (C-32-V3)
power supply	10 ... 18 VDC
power consumption (typical)	3 W
power consumption (sleep model)	60 mW
power consumption (max.)	20 W
interface to s::can terminals	M12 RSTS 8Y (IP67), RS485, Ethernet
interface to third party terminals	con::nect V3 incl. Modbus RTU, REST API, Modbus TCP/IP
digital interface (for cleaning devices)	1 digital in/out 1 digital out
internal sensors	supply voltage sensor, tilt sensor, rotation sensor
network connection	100Base-T Ethernet, WLAN
status information	RGB LED ring

cable length	1 m fixed cable (-010) or 7.5 m fixed cable (-075) or 15 m fixed cable (-150)
cable type	PU jacket
housing material	stainless steel 1.4404 (optional titanium)
window material	optical path length 5 and 1 mm: sapphire optical path length 35 mm: fused silica (UV-grade)
weight (min.)	3.4 kg (incl. cable)
dimensions (Ø x l)	optical path length 35 mm: 44 x 473 mm / 517.5 mm optical path length 5 mm: 44 x 457 mm / 501.5 mm optical path length 1 mm: 44 x 453 mm / 497.5 mm
operating temperature	0 ... 50 °C
operating pressure	0 ... 5 bar
high pressure specification (optional)	10 bar
installation / mounting	submersed or in a flow cell
flow velocity	3 m/s (max.)
mechanical stability	30 Nm
ingress protection class	IP68
automatic cleaning	media: compressed air or autobrush permissible pressure: 3 ... 6 bar
storage temperature	-10 ... 65 °C
conformity - environmental testing	EN 60721-3
conformity - EMC	EN 61326-1
conformity - RoHS 2	EN 50581
standard guarantee	1 years
extended guarantee (optional)	3 years

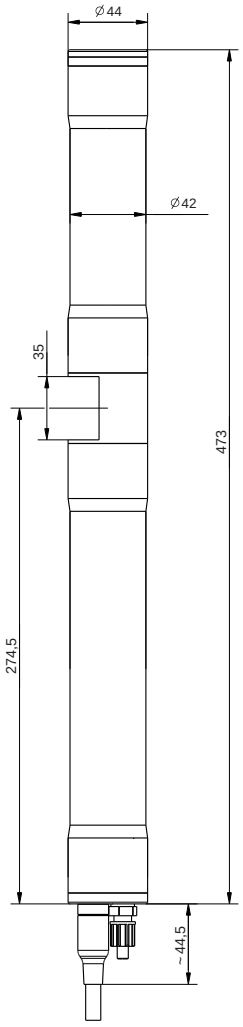
drinking water

		parameter		
		turbidity [NTU/FTU]	O_3 [mg/l]	part number
ozo::lyser II (2 parameters, 35 mm OPL)	min.	0	0	G3-02-D-35-NO-xxx
	max.	170	25	

uv::lyser V - V3

uv::lyser V monitors turbidity and up to 4 freely selectable wavelengts

- measuring principle: UV-Vis spectrometry over the total range (190-750 nm)
- web server on board - IoT enabled, no user software is needed to configure the probe
- communicates directly with your mobile device via WLAN
- 8 GB onboard memory - capacity for logging data for many years
- improved optical performance - revolutionary precision
- fast measurement interval - every 30 seconds possible
- extremely power efficient - sleep mode for low energy consumption
- multiparameter probe with 1 mm, 5 mm or 35 mm optical path length, ideal for waste water, surface water and drinking water
- long term stable and maintenance free in operation
- factory precalibrated, local multi-point calibration possible
- automatic cleaning with compressed air or brush



recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-pro2-230	con::lyte pro
B-33-012	con::nect V3
B-32-xxx	s::can compressor
B-44 B-44-2	cleaning valve
C-32-V3	Adapter cable to connect a V3 spectrometer (M12) to V2 Terminal (MIL Plug)
F-110-V3	carrier s::can spectrometer V3 & V2 probe, 45°
F-120-V3	carrier s::can spectrometer V3 & V2 probe, vertical attachment
F-446-V3	flow cell AutoBrush, POM-C (for spectrometer V3 & V2 pathlength 35 mm)
S-11-xx-moni	moni::tool Software
F-146-rs-x	ruck::sack (submersible Autobrush)

technical specification	
measuring principle	UV-Vis spectrometry 200 - 750 nm
measurement interval	30 sec (configurable, depending on application)
automatic compensation cross sensitivities	turbidity / solids / organic substances
precalibrated ex-works	all parameters
accuracy standard solution (>1 mg/l)	NO_3-N: +/- 3% +1/OPL[mg/l]* COD-KHP: +/-3% +10/OPL[mg/l]* (* OPL ... optical pathlength in mm)
access to raw signals	no
reference standard	distilled water
onboard memory	8 GB
integrated temperature sensor	0 ... 45 °C
resolution temperature sensor	0.1 °C
integration via	con::cube V3 con::nect V3 con::lyte V5 (D-320-pro2) and adapter cable (C-32-V3)
power supply	10 ... 18 VDC
power consumption (typical)	3 W
power consumption (sleep model)	60 mW
power consumption (max.)	20 W
interface to s::can terminals	M12 RSTS 8Y (IP67), RS485, Ethernet
interface to third party terminals	con::nect V3 incl. Modbus RTU, REST API, Modbus TCP/IP
digital interface (for cleaning devices)	1 digital in/out 1 digital out
internal sensors	supply voltage sensor, tilt sensor, rotation sensor
network connection	100Base-T Ethernet, WLAN
status information	RGB LED ring

cable length	1 m fixed cable (-010) or 7.5 m fixed cable (-075) or 15 m fixed cable (-150)
cable type	PU jacket
housing material	stainless steel 1.4404 (optional titanium)
window material	optical path length 5 and 1 mm: sapphire optical path length 35 mm: fused silica (UV-grade)
weight (min.)	3.4 kg (incl. cable)
dimensions (Ø x l)	optical path length 35 mm: 44 x 473 mm / 517.5 mm optical path length 5 mm: 44 x 457 mm / 501.5 mm optical path length 1 mm: 44 x 453 mm / 497.5 mm
operating temperature	0 ... 50 °C
operating pressure	0 ... 5 bar
high pressure specification (optional)	10 bar
installation / mounting	submersed or in a flow cell
flow velocity	3 m/s (max.)
mechanical stability	30 Nm
ingress protection class	IP68
automatic cleaning	media: compressed air or autobrush permissible pressure: 3 ... 6 bar
storage temperature	-10 ... 65 °C
conformity - environmental testing	EN 60721-3
conformity - EMC	EN 61326-1
conformity - RoHS 2	EN 50581
standard guarantee	1 years
extended guarantee (optional)	3 years

surface water

		parameter			
		turbidity [NTU/FTU]	UV254 [Abs/m]	UV254 f [Abs/m]	part number
uv::lyser V (5 parameters, 5 mm OPL)	min.	0	0	0	G3-U5-R-05-NO-xxx
	max.	1400	500	420	

drinking water

		parameter			
		turbidity [NTU/FTU]	UV254 [Abs/m]	UV254 f [Abs/m]	part number
uv::lyser V (5 parameters, 35 mm OPL)	min.	0	0	0	G3-U5-D-35-NO-xxx
	max.	170	71	60	

spectro::lyser™ titanium pro

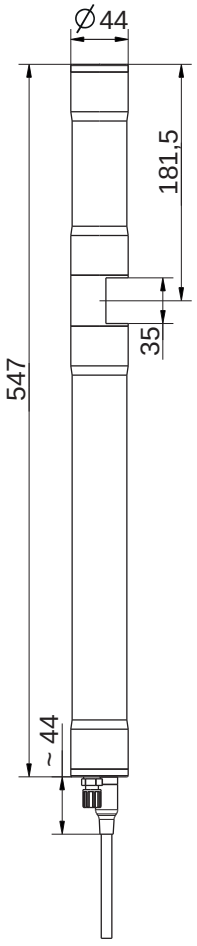
spectro::lyser™ titanium pro monitors depending on the application an individual selection of: TSS, turbidity, NO_3-N, COD, BOD, TOC, DOC, UV254, NO_2-N, color, BTX, O_3, HS-, fingerprints,spectral alarms and temperature

- s::can plug & measure
- measuring principle: UV-Vis spectrometry over the total range (190-750 nm)
- ideal for desalination and sea water
- rugged design with titanium grade 2 housing
- factory precalibrated, with advanced calibration service included
- long term stable and maintenance free in operation
- automatic cleaning with compressed air or brush
- mounting and measurement directly in the media (InSitu) or in a flow cell (monitoring station)
- multiparameter probe with adjustable open path length
- adaption of optical path lengths to 35 mm, 5 mm, 2 mm or 0.5 mm possible

up to 10 bar
operating pressure

up to 50 °C
operating temperature

highly resistant
titanium grade 2



recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
B-32-xxx	s::can compressor
B-44 B-44-2	cleaning valve
F-120-V3	carrier s::can spectrometer V3 & V2 probe, vertical attachment
S-11-xx-moni	moni::tool Software
C-32-MIL	Adapter cable to connect a V2 spectrometer (MIL) to V3 Terminal (M12)

technical specification

measuring principle	UV-Vis spectrometry 190 - 750 nm UV spectrometry 190 - 390 nm
measuring principle detail	xenon flash lamp, 256 photo diodes
automatic compensation instrument	two beam measurement, complete spectrum
automatic compensation cross sensitivities	turbidity / solids / organic substances
precalibrated ex-works	all parameters
accuracy standard solution (>1 mg/l)	NO_3-N: +/- 2% +1/OPL[mg/l]* COD-KHP: +/-2% +10/OPL[mg/l]* (* OPL ... optical pathlength in mm)
access to raw signals	access to spectral information
reference standard	distilled water
onboard memory	656 KB
integrated temperature sensor	-10 ... 50 °C
resolution temperature sensor	0.1 °C
integration via	con::lyte con::nect
power supply	11 ... 15 VDC
power consumption (typical)	4.2 W
power consumption (max.)	20 W
interface to s::can terminals	MIL connector, RS485
interface to third party terminals	con::nect incl. gateway modbusRTU

cable length	7.5 m fixed cable (-075) or 1 m fixed cable (-010)
cable type	PU jacket
housing material	titanium grade 2 (3.7035)
window material	optical path length 5 ... 0.5 mm: sapphire optical path length 35 mm: fused silica (UV-grade)
weight (min.)	2.8 kg (incl. cable)
dimensions (Ø x l)	44 mm x 547 mm / 591 mm
operating temperature	0 ... 50 °C
operating pressure	0 ... 10 bar
installation / mounting	submersed or in a flow cell
flow velocity	3 m/s (max.)
mechanical stability	30 Nm
ingress protection class	IP68
automatic cleaning	media: compressed air or autobrush
storage temperature	-10 ... 50 °C
conformity - EMC	EN 61326-1, EN 61326-2-3
conformity - safety	EN 61010-1
standard guarantee	1 years
extended guarantee (optional)	3 years

sea water

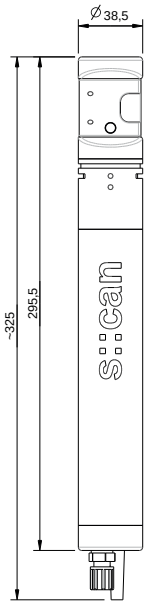
		parameter						
		turbidity [NTU/FTU]	TOC [mg/l]	DOC [mg/l]	NO_3-N [mg/l]	UV254 [Abs/m]	UV254 f [Abs/m]	part number
spectro::lyser™ UV-Vis (Turbidity, TOC, DOC, NO_3-N)	min.	0	0	0	0	0	0	SP-1-015-p0-s-TI-010 / -075 (incl. Global Calibration o1)
	max.	400	60	45	45	165	140	
spectro::lyser™ UV-Vis (Turbidity, TOC, DOC, NO_3-N)	min.	0	0	0	0	0	0	SP-1-035-p0-s-TI-010 / -075 (incl. Global Calibration o1)
	max.	170	25	20	20	70	60	
spectro::lyser™ UV-Vis (Turbidity, TOC, DOC, NO_3-N)	min.	0	0	0	0	0	0	SP-1-005-p0-s-TI-010 / -075 (incl. Global Calibration o1)
	max.	1200	180	140	140	500	420	

s::can
A Badger Meter® Brand

i::scan

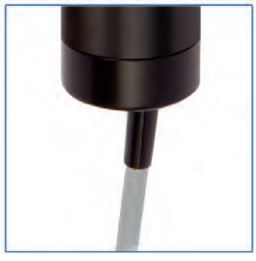
i::scan

i::scan monitors depending on the application an individual selection of: turbidity, TOC, DOC, UV254, UV254 f, color, UVT10, UVT10 f, UVT100 f and temperature



- s::can plug & measure
- turbidity: measurement according to EPA 180.1 and ISO 7027, 90° scattering (35 mm path length)
- new light emitting technology
- no consumables, no moving parts
- special, non-fouling optical window material
- low power consumption (less than 1 W typical)
- dual-beam compensated optics
- optional automatic cleaning compressed air (InSitu, only for version -075 with fixed cable) or autobrush
- non aging optics, long term stable, 100 % corrosion free
- plug connection or fixed cable
- 5000 hours maintenance free operation
- mounting and measurement directly in the media (InSitu) or in a flow cell (monitoring station)
- can be mounted directly in a mains pipe / pressure pipe
- operation via s::can terminals & s::can software
- no consumables
- automatic compensation against multiple cross-sensitivities by unique chemometrics (e.g. turbidity)

recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D--320-eco-230	con::lyte eco
B-32-xxx	s::can compressor
F-110-iscan	carrier i::scan, for easy horizontal attachment
S-11-xx-moni	moni::tool Software
F-146-rs-x	ruck::sack (submersible Autobrush)
F-120-iscan	carrier i::scan, for easy vertical attachment
F-48-iscan	flow cell for i::scan (waste water), PVC
F-48-process	process connection 1", PVC



technical specification

measuring principle	35 mm optical path length: spectrometry combined 180° absorption and 90° scattering turbidity: according to EPA 180.1 and ISO 7027 5 mm optical path length: absorption
resolution	turbidity (35 mm): 0.001 NTU/FTU turbidity (5 mm): 0.01 NTU/FTU (0.1 above 1000 NTU/FTU) color: 0.01 Hazen UV254: 0.015 Abs/m TOC: 0.01 mg/l
accuracy (standard solution)	turbidity submersed (5 mm): 2 NTU/FTU or +/- 5 %* turbidity in flow cell (35 mm): 0.02 NTU/FTU or +/- 2.5 %* color: 1 Hazen or +/- 2.5 %* TOC: 0.1 mg/l or +/- 2.5 %* UV254: 0.1 Abs/m or +/- 2.5 %* (*whichever is greater)
automatic compensation instrument	dual-beam and 180° path
precalibrated ex-works	all parameters
reference standard	distilled water
onboard memory	512 MB
integrated temperature sensor	-20 ... 70 °C
resolution temperature sensor	0.06 °C
integration via	con::lyte con::nect

power supply	10 ... 18 VDC
power consumption (typical)	20 mA @ 12V
power consumption (max.)	200 mA @ 12V
interface to s::can terminals	RS485, MODBUS
cable length	7.5 m fixed cable (-075) or plug connection (-000)
housing material	PEEK, POM-C
weight (min.)	approx. 330 g
dimensions (Ø x l)	35 mm path length: 38.5 x 325 mm 5 mm path length: 38.5 x 295 mm
operating temperature	0 ... 45 °C
operating pressure	0 ... 8 bar
installation / mounting	submersed or in a flow cell
flow velocity	3 m/s (max.)
automatic cleaning	with autobrush or compressed air (only possible for version (-075) with fixed cable) permissible pressure: 3 ... 6 bar
storage temperature	-20 ... 60 °C
conformity - EMC	EN 61326-1 EN 61326-2-3
conformity - safety	EN 61010-1
standard guarantee	1 years
extended guarantee (optional)	3 years
protection class (-000)	IP67
protection class (-075)	IP68

surface water

		parameter								
		turbidity [NTU/FTU]	color (app) [Hazen]	color (tru) [Hazen]	TOC [mg/l]	DOC [mg/l]	UV254 [Abs/m]	UV254 f [Abs/m]	UVT10 [%]	part number
i::scan_NTU/FTU	min.	0								Y01-1-r-000 / -075
	max.	800								
i::scan_NTU/FTU+Color	min.	0	0	0						Y02-1-r-000 / -075
	max.	800	500	500						
i::scan_NTU/FTU+UV254	min.	0					0	0	25	Y03-2-r-000 / -075
	max.	800					70	70	100	
i::scan_NTU/FTU+UV254+Color	min.	0	0	0			0	0	25	Y04-2-r-000 / -075
	max.	800	500	500			70	70	100	
i::scan_NTU/FTU+TOC_eq+UV254	min.	0			0	0	0			Y05-3-r-000 / -075
	max.	800			25	25	70			
i::scan_NTU/FTU+TOC_eq+UV254+Color	min.	0	0	0	0	0	0			Y06-3-r-000 / -075
	max.	800	500	500	25	25	70			

drinking water

		parameter								
		turbidity [NTU/FTU]	color (app) [Hazen]	color (tru) [Hazen]	TOC [mg/l]	DOC [mg/l]	UV254 [Abs/m]	UV254 f [Abs/m]	UVT10 [%]	part number
i::scan_NTU/FTU	min.	0								Y01-1-d-000 / -075
	max.	800								
i::scan_NTU/FTU+Color	min.	0	0	0						Y02-1-d-000 / -075
	max.	800	500	500						
i::scan_NTU/FTU+UV254	min.	0					0	0	25	Y03-2-d-000 / -075
	max.	800					70	70	100	
i::scan_NTU/FTU+UV254+Color	min.	0	0	0			0	0		Y04-2-d-000 / -075
	max.	800	500	500			70	70		
i::scan_NTU/FTU+TOC_eq+UV254	min.	0			0	0	0			Y05-3-d-000 / -075
	max.	800			25	25	70			
i::scan_NTU/FTU+TOC_eq+UV254+Color	min.	0	0	0	0	0	0			Y06-3-d-000 / -075
	max.	800	500	500	25	25	70			

s::can
A Badger Meter® Brand

Ionselective Probes

ammo::lyser electrodes

ammo::lyser in aquarium

ISE-Probes

fig.1: ammo::lyser™ - electrodes

"Why do we measure"

ammo::lyser™

Due to human activities (primarily agriculture, industry and insufficient waste water treatment) many natural waters suffer from a surplus of nutrients which severely impairs water quality and ecology. Using the ammo::lyser™ the essential nutrient ammonium can be measured continuously and accurately down to the low concentrations encountered in natural waters.

Ammonium is always present in water in equilibrium with ammonia, the latter being especially toxic to fish even at very low concentrations. The equilibrium between ammonium and ammonia is pH driven. As the ammo::lyser™ provides pH together with ammonium it is used in natural waters as well as in fish farms to detect harmful conditions in real time.

When drinking water is disinfected with chloramines, formed In-Situ by reaction of chlorine with ammonium, a continuous ammonium measurement is critical for efficient control of the disinfection process - the ammo::lyser™ is capable to succeed also this application.

In addition, the ammo::lyser can be equipped with a ISE-nitrate electrode in order to be able to monitor the most common nitrogen parameters NO3-N and NH4-N simultaneously. Drinking water suppliers (source water quality) and also environmental agencies have already been using ammo::lysers for years now.

fluor::lyser

The fluor::lyser is a version of the s::can ion selective probe that can be used for the online measurement of fluoride. It is used for continuous monitoring and online process control by water utilities that fluoridate their drinking water.

s::can
A Badger Meter® Brand

ISE-Probes

"How do we measure"

All s::can ISE probes are ion selective multiparameter probes that can measure multiple water quality parameters continuously (On-Line) and directly in the water without the need for complex and maintenance intensive sample pre-treatment.

All s::can ISE probes can be operated according to the "plug & measure" principle. With a simple plug connection, which provides power supply and data communication. The s::can sensors are connected to an s::can terminal and are ready for use. All s::can ISE probes are pre-calibrated ex works. The "plug & measure" principle avoids complex installation procedures on site and thus does not only save time during initial operation, but also reduces avoidable errors to a minimum.

The highly optimised design completely eliminates all moving parts in contact with the water. This reduces failures, spare part costs and maintenance dramatically.

Using standardised mounting devices, s::can ISE probes can be installed quickly and effortlessly, either submersed (InSitu) or in a flow through setup (Bypass, monitoring station).

s::can ISE probes utilise an automatic cleaning system that uses compressed air for removal of fouling. This system has proven highly efficient and reliable, even in untreated wastewater. Because of this, regular manual cleaning is not required, thus significantly reducing maintenance for the operator.

Like all other s::can instruments, s::can ISE probes are intelligent instruments and recognise and communicate all measurement related and technical issues as soon as they occur.

Although typically not or not often required, it is possible to adjust the calibration of the ammo::lyser™ to the actual matrix in which it is operated, in case deviations between online readings and reference analyses should be observed. Even the validation of the accuracy of the local calibration can be performed without taking the instrument out of the water.

The robust ion selective membrane has a typical lifetime of 6 months in applications with low NH4-N concentrations, e.g. in river water. In applications with higher ammonium loads, as in waste water influent, the typical lifetime of the membrane increases to as much as 1 to 2 years.

In order to compensate possible interferences online and automatically the ammo::lyser™ can measure potassium, pH and temperature all together with ammonium. In some applications substantial changes in these parameters can be observed, which interfere with the ammonium measurement. Thus online measurements are used to eliminate this influence and allow an ammonium measurement with the highest possible accuracy. The results of these additional sensors (see figure 1: ammo::lyser™ electrodes) can be displayed as well. When applying the ammo::lyser™ in waters of stable compositions or high concentrations of ammonium, the need to perform such compensations is much reduced. Under such circumstances the unique selectivity of the ammonium membrane is sufficient to achieve reliable measurement results.

Using the combination of innovative algorithms that model the Nernst equation and extensive compensation of possible interferences makes it possible to apply the ammo::lyser™ also in low concentration ranges (below 0.5 mg/L), throughout applications where ion selective sensors of other manufacturers do not function satisfactory.

The durable membranes of the ammo::lyser™ can be exchanged individually when necessary - without the need to replace expensive electrodes or even complete cartridges. The unique non-porous, solid-state reference electrode ensures long lifetime in this way the regular costs for spare parts are reduced to a minimum.

Its unrivalled measurement features in combination with the lowest possible total costs - initial cost and foreseeable operational costs - make the s::can ISE probe the most attractive solution available today.

ammo::lyser™ eco

ammo::lyser™ II eco: monitors NH_4-N and temperature

ammo::lyser™ III eco+pH additionally monitors pH

ammo::lyser™ III eco+NO_3-N additionally monitors NO_3-N

ammo::lyser™ III eco+Cl- additionally monitors chloride

ammo::lyser™ IV eco+pH+NO_3-N additionally monitors pH and NO_3-N

ammo::lyser™ VI eco+pH+Cl- additionally monitors pH and chloride

- s::can plug & measure
- measuring principle: ISE (ionselective electrodes) - without potassium compensation
- multiparameter probe
- long term stable, factory precalibrated
- minimal maintenance, automatic cleaning with compressed air
- unique, non-porous / non-leaking reference electrode for technically unrivalled and consistent performance
- ISE refurbishment - the easy way to minimise maintenance
- easy & quick mounting and measurement directly in the media (InSitu) or in a flow cell (monitoring station)
- automatic temperature compensation and pH compensation possible
- ideal for surface water, ground water, drinking water and waste water
- life time of ISE: typically 6 month (for applications <1mg/l NH_4-N), resp. 1 to 2 years (for applications >1mg/l NH_4-N)
- plug connection or fixed cable

recommended accessories	
part number	**article name**
B-44 B-44-2	cleaning valve
C-1-010-sensor	1 m connection cable for s::can physical and ISE probes
F-11-oxi-ammo	carrier oxi::lyser / soli::lyser / s::can ISE probes
F-45-ammo	flow cell for ammo::lyser™
D-330-xxx	con::cube V3
D-320-xxx	con::lyte

technical specification

measuring principle	ISE
measuring principle detail	NH4-N: ionophore membrane pH: non-porous reference electrode NO3-N: ionophore membrane Cl-: ionophore membrane
resolution	NH4-N, K, NO3-N, Cl, F: 0.01 at 0.02 ...19.99 mg/l 0.1 at 20.0 ... 99.9 mg/l 1 at 100 ... 1000 mg/l T: 0.1 °C
accuracy (standard solution)	NH4-N: +/-3% or +/-0.5mg/l* (*whichever is greater)
automatic compensation cross sensitivities	E-532-eco-xxx: temp E-532-eco-pH-xxx: temp, pH E-532-eco-NO_3-N-xxx: temp E-532-eco-NO_3-N-pH-xxx: temp, pH E-532-eco-CL-xxx: temp E-532-eco-CL-pH-xxx: temp, pH
precalibrated ex-works	all parameters
response time (T90)	0 ... 60 sec.
integration via	con::lyte con::nect
power supply	10 ... 30 VDC

power consumption (typical)	0.72 W
interface to s::can terminals	sys plug (IP67), RS485
cable length	7.5 m fixed cable (-075) or plug connection (-000)
cable type	PU jacket
housing material	stainless steel 1.4571, POM-C
weight (min.)	2.7 kg
dimensions (Ø x l)	60 x 326 mm
operating temperature	0 ... 60 °C
operating pressure	0 ... 1 bar
installation / mounting	submersed or in a flow cell
process connection	bayonet
flow velocity	0.01 m/s (min.), 3 m/s (max.)
automatic cleaning	media: compressed air permissible pressure: 2 ... 4 bar
storage temperature (electrode)	2 ... 40 °C
storage temperature (sensor)	2 ... 40 °C
conformity - EMC	EN 50081-1, EN 50082-1, EN 60555-2, EN 60555-3
conformity - safety	EN 61010-1
protection class (-000)	IP67
protection class (-075)	IP68

measuring range

		parameter					
		NH_4-N [mg/l]	NO_3-N [mg/l]	pH [pH]	Cl- [mg/l]	temperature [°C]	part number
ammo::lyser™ II eco (NH_4-N, temp)	min.	0.1				0	E-532-eco-000 / -075
	max.	1000				60	
ammo::lyser™ III eco+Cl- (NH_4-N, temp, Cl-)	min.	0.1			1	0	E-532-eco-CL-000 / -075
	max.	1000			1000	60	
ammo::lyser™ III eco+NO_3-N (NH_4-N, temp, NO_3-N)	min.	0.1	0.3			0	E-532-eco-NO_3-N-000 / -075
	max.	1000	1000			60	
ammo::lyser™ III eco+pH (NH_4-N, temp, pH)	min.	0.1		2		0	E-532-eco-pH-000 / -075
	max.	1000		12		60	
ammo::lyser™ IV eco+Cl- (NH_4-N, temp, Cl-, pH)	min.	0.1		2	1	0	E-532-eco-CL-pH-000 / -075
	max.	1000		12	1000	60	
ammo::lyser™ IV eco+NO_3-N+pH (NH_4-N, temp, NO_3-N, pH)	min.	0.1	0.3	2		0	E-532-eco-NO_3-N-pH-000 / -075
	max.	1000	1000	12		60	

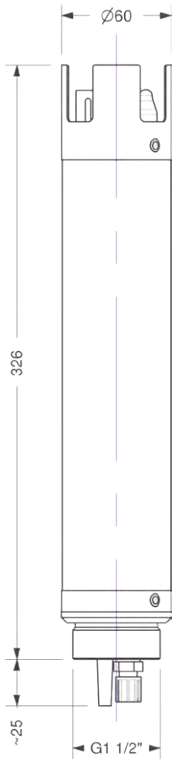
ammo::lyser™ pro

ammo::lyser™ III pro monitors NH_4-N and temperature

ammo::lyser™ IV pro+pH monitors NH_4-N, temperature and pH

ammo::lyser™ IV pro+NO_3-N monitors NH_4-N, temperature and NO_3-N

- s::can plug & measure
- measuring principle: ISE (ionselective electrodes) - with potassium compensation
- multiparameter probe
- long term stable, factory precalibrated
- automatic cleaning with compressed air
- easy & quick mounting and measurement directly in the media (InSitu) or in a flow cell (monitoring station)
- ISE refurbishment - the easy way to minimise maintenance
- unique, non-porous / non-leaking reference electrode for technically unrivalled and consistent performance
- operation via s::can terminals & s::can software
- automatic temperature and potassium compensation, pH compensation possible
- ideal for surface water, ground water, drinking water and waste water
- minimal maintenance
- life time of ISE: typically 6 month (for applications <1mg/l NH_4-N), resp. 1 to 2 years (for applications >1mg/l NH_4-N)
- plug connection or fixed cable
- automatic compensation against cross-sensitivities (potassium & pH, optional)



recommended accessories	
part number	**article name**
B-44 B-44-2	cleaning valve
C-1-010-sensor	1 m connection cable for s::can physical and ISE probes
F-11-oxi-ammo	carrier oxi::lyser / soli::lyser / s::can ISE probes
F-45-ammo	flow cell for ammo::lyser™
F-45-process	process connection 1/4" G
D-330-xxx	con::cube V3
D-320-xxx	con::lyte

technical specification

measuring principle	ISE
measuring principle detail	NH4-N: ionophore membrane K: ionophore membrane pH: non-porous reference electrode NO3-N: ionophore membrane
resolution	NH4-N, K, NO3-N, Cl, F: 0.01 at 0.02 ...19.99 mg/l 0.1 at 20.0 ... 99.9 mg/l 1 at 100 ... 1000 mg/l T: 0.1 °C
accuracy (standard solution)	NH4-N: +/-3% or +/-0.1mg/l* (*whichever is greater)
automatic compensation cross sensitivities	E-532-pro-xxx: temp, K E-532-pro-pH-xxx: temp, pH, K E-532-pro-NO_3-N-xxx: temp, K
precalibrated ex-works	all parameters
response time (T90)	0 ... 120 sec.
integration via	con::nect con::lyte
power supply	10 ... 30 VDC
power consumption (typical)	0.72 W
interface to s::can terminals	sys plug (IP67), RS485

cable length	7.5 m fixed cable (-075) or plug connection (-000)
cable type	PU jacket
housing material	stainless steel 1.4571, POM-C
weight (min.)	2.7 kg
dimensions (Ø x l)	60 x 326 mm
operating temperature	0 ... 60 °C
operating pressure	0 ... 1 bar
installation / mounting	submersed or in a flow cell
process connection	bayonet
flow velocity	0.01 m/s (min.) 3 m/s (max.)
automatic cleaning	media: compressed air permissible pressure: 2 ... 4 bar
storage temperature (electrode)	2 ... 40 °C
storage temperature (sensor)	2 ... 40 °C
conformity - EMC	EN 50081-1 EN 50082-1 EN 60555-2 EN 60555-3
conformity - safety	EN 61010-1
protection class (-000)	IP67
protection class (-075)	IP68

measuring range

		parameter					
		NH_4-N [mg/l]	NO_3-N [mg/l]	K [mg/l]	pH [pH]	temperature [°C]	part number
ammo::lyser™ III pro (NH_4-N, K, temp)	min.	0.1		1		0	E-532-pro-000 / -075
	max.	1000		1000		60	
ammo::lyser™ IV pro+NO_3-N (NH_4-N, NO_3-N, K, temp)	min.	0.1	0.3	1		0	E-532-pro+NO_3-N-000 / -075
	max.	1000	1000	1000		60	
ammo::lyser™ IV pro+pH (NH_4-N, pH, K, temp)	min.	0.1		1	2	0	E-532-pro+pH-000 / -075
	max.	1000		1000	12	60	

s::can
A Badger Meter® Brand

Physical Probes

flow cell with probe

oxi::lyser

Physical Probes

"Why do we measure"

oxi::lyser™

In drinking water applications the oxi::lyser™ is mainly used in early warning systems detecting problems in raw water quality: Reduced dissolved oxygen concentrations are often an indicator for harmful microbial or chemical contaminations of the water. Applied in natural waters or on fish farms the oxi::lyser™ can detect anaerobic conditions, which are life threatening aquatic organisms, and thus it helps to prevent ecological as well as economic damage.

pH::lyser

Drinking water suppliers use the pH::lyser for the continuous process monitoring and control of chemical and physical treatment steps that are characterised by changes in pH, such as neutralisation, flocculation or mixing of source waters. Furthermore, the pH::lyser is applied in early warning systems that monitor source water quality, both in ground and surface water.

redo::lyser

In drinking water treatment the redo::lyser is used mainly for process monitoring and control of treatment steps that result in significant changes of the oxidation-reduction potential. Besides this, the redo::lyser is also applied as a component in early warning systems that monitor source water quality, both in ground and surface water.

condu::lyser

The condu::lyser is used for quality control in drinking water production and distribution. From source to tap the electrical conductivity of the drinking water is an essential parameter indicating the level of salts dissolved and thus the purity of the water.

chlori::lyser

When drinking water is disinfected through chlorination it is necessary to continuously control the actual free chlorine level. This is crucial in the first place to ensure efficient disinfection and secondly to prevent regrowth of microorganisms in the finished water. For these two tasks it is necessary to carefully process control the level of free chlorine, also in order to prevent the concentration of harmful disinfection byproducts that can be formed in the presence of chlorine.

fig.1: oxi::lyser™

fig.2: condu::lyser

fig.3: pH::lyser

Physical Probes

"How do we measure"

Just as all other s::can instruments the s::can physical probes can be operated according to the "plug & measure" principle. With a simple plug connection, which provides power supply and data communication, the s::can probes are connected to an s::can terminal and are ready for use. All s::can probes are pre-calibrated ex works and do not require any conditioning before they can be used - all can be used continuously (OnLine) and directly in the water (InSitu). The "plug & measure" principle avoids complex installation procedures on site and thus does not only save time during initial operation, but also reduces avoidable errors.
The highly optimised design completely eliminates all moving parts in contact with the water. This reduces failures and maintenance dramatically.
Using standardised mounting devices s::can physical probes can be installed quickly and effortlessly, either submersed (InSitu) or in a flow through setup (by-pass, monitoring station).
Like all other s::can instruments s::can physical probes are intelligent instruments - amongst others local calibrations are stored on the probes and auto-diagnosis procedures are used to ensure best possible operation.

oxi::lyser™ (see fig.1)
is an optical multi-parameter probe that measures the concentration of dissolved oxygen and the temperature directly in the water. The oxi::lyser™ does not need a minimum flow to produce accurate readings and integrates the temperature measurement for On-Line correction. The sensing element, which uses the principle of fluorescence for the oxygen measurement, is neither affected nor damaged by direct exposure to sunlight. Under normal conditions, fouling of the sensing element will not affect the results. However, to be sure that fouling is kept to a minimum, the oxi::lyser™ can be cleaned automatically with compressed air. The oxi::lyser uses no replaceable parts or consumables. Therefore, when operated properly there will be no costs for spare parts at all. For the oxi::lyser™ we guarantee replacement of spare parts free of charge for the first three years after delivery (upon presenting the guarantee card).

condu::lyser (see fig.2)
is a multi-parameter probe that measures conductivity and temperature directly in the water. The condu::lyser does not require a minimum flow to produce accurate readings and uses the temperature to correct the conductivity measurement online. The 4-electrode measurement of the electrical conductivity produces results that are practically independent of possible fouling. The condu::lyser uses no replaceable parts or consumables. Therefore, when operated properly there will be no costs for spare parts at all.

pH::lyser (see fig.3)
is a multi-parameter probe that measures the pH value and temperature directly in the water. The pH::lyser uses the temperature to correct the result of the pH measurement online. The non-porous, solid-state reference electrode ensures excellent pH readings and a long lifetime of the electrode.

redo::lyser
is a probe that measures the oxidation-reduction potential (also known as redox potential) and temperature directly in the water. The non-porous, solid state reference electrode ensures excellent ORP readings and a long lifetime of the electrode.

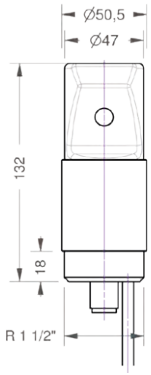
chlori::lyser
chlori::lyser monitors free or total chlorine - mounted in a flow cell setup. Due to the membrane covered amperometric measuring principle, flow and pH fluctuations of the water do not influence the measurement result. Additionally, the integrated temperature compensation and the special, third electrode completely eliminates potential interferences.

Their unrivalled measurement features in combination with the lowest possible total costs - initial cost and foreseeable operational costs - make s::can sensors the most attractive solution available today.

oxi::lyser™

oxi::lyser™ monitors disolved oxygen & temperature

- s::can plug & measure
- measuring principle: optical / fluorescence
- multiparameter sensor
- ideal for surface water, ground water, drinking water and waste water
- long term stable and maintenance free in operation
- factory precalibrated
- automatic cleaning with compressed air
- mounting and measurement directly in the media (InSitu) or in a flow cell
- no flow necessary
- operation via s::can terminals & s::can software
- minimal maintenance (no consumables)



recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-xxx	con::lyte
B-44 B-44-2	cleaning valve
F-45-oxi	flow cell for oxi::lyser™ and soli::lyser

technical specification

measuring principle	fluorescence
resolution	0.01 mg/l O_2
accuracy (standard solution)	O_2: +/- 0.02 mg/l or +/- 1 %* (*whichever is greater)
response time (T90)	60 ... 0 sec.
reference standard	saturated sodium sulfite solution
integrated temperature sensor	0 ... 50 °C
resolution temperature sensor	0.2 °C
integration via	con::lyte con::nect
power supply	6 ... 16 VDC
power consumption (max.)	0.32 W
interface to s::can terminals	sys plug (IP67), RS485
cable length	10 m
housing material	CPVC, stainless steel, epoxy

weight (min.)	540 g
dimensions (Ø x l)	50.5 mm x 132 mm
operating temperature	0 ... 60 °C
operating pressure	0 ... 7 bar
installation / mounting	submersed or in a flow cell
process connection	R 1 1/2"
pH range	2 ... 10
ingress protection class	IP68
automatic cleaning	media: compressed air permissible pressure: 2 ... 4.5 bar
storage temperature	0 ... 60 °C
conformity - EMC	EN 50081-2, EN55011
conformity - safety	EN 61000-4, EN61010-1
standard guarantee	1 years
extended guarantee (optional)	3 years

measuring range

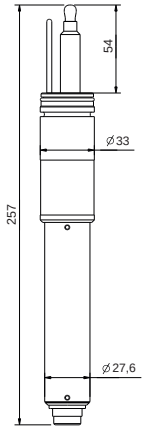
		parameter		
		O_2 [mg/l]	temperature [°C]	part number
oxi::lyser (O_2, temp)	min.	0	0	E-501-075
	max.	25	50	

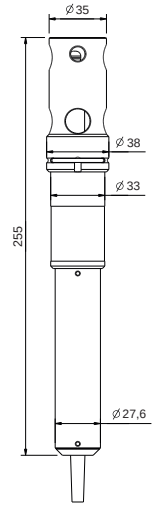
pH::lyser

pH::lyser eco monitors pH & temperature

pH::lyser pro: high temperature range

- s::can plug & measure
- measuring principle: unique, non-porous / non-leaking combined reference electrode for technically unrivalled and consistent pH performance
- multiparameter sensor
- ideal for surface water, ground water, drinking water and waste water
- long term stable and maintenance free in operation
- factory precalibrated
- mounting and measurement directly in the media (InSitu) or in a flow cell
- operation via s::can terminals & s::can software
- optional: automatic cleaning with compressed air
- plug connection or fixed cable





recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-xxx	con::lyte
C-1-010-sensor	1 m connection cable for s::can physical and ISE probes
F-12-sensor	carrier s::can physical probes
F-45-four	flow cell for four s::can physical probes
F-46-four-iscan	i::scan flow cell for up to 3 additional s::can probes
F-45-sensor	flow cell for s::can sensor
S-11-xx-moni	moni::tool Software

technical specification

measuring principle	potentiometric
measuring principle detail	combined, non-porous reference electrode
resolution	0.01 pH
accuracy (standard solution)	0.1 pH
automatic compensation instrument	temperature
response time (T90)	30 ... 0 sec.
integrated temperature sensor	0 ... 90 °C
integration via	con::lyte con::nect
power supply	9 ... 18 VDC
power consumption (typical)	0.8 W
power consumption (max.)	1 W
interface to s::can terminals	sys plug (IP67), RS485
cable length	7.5 m fixed cable (-075) or plug connection (-000)
cable type	PU jacket
housing material	stainless steel 1.4404/1.4401, POM-C or stainless steel 1.4404/1.4401, PVC (E-514-4-075)

weight (min.)	400 g
dimensions (Ø x l)	33 x 257 mm
operating pressure	0 ... 10 bar
installation / mounting	submersed or in a flow cell
process connection	quick connect
flow velocity	3 m/s (max.) 0.01 m/s (min.)
automatic cleaning	media: compressed air permissible pressure: 3 ... 6 bar
storage temperature (electrode)	-5 ... 30 °C
storage temperature (sensor)	-10 ... 60 °C
conformity - EMC	EN 61326-1
conformity - safety	EN 61010-1
operating temperature (eco)	0 ... 70 °C
operating temperature (pro)	0 ... 90 °C
protection class (-000)	IP67
protection class (-075)	IP68

measuring range

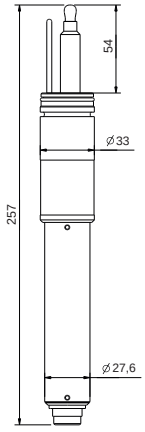
		parameter		
		pH [pH]	temperature [°C]	part number
pH::lyser eco (pH, temp)	min.	2	0	E-514-2-000 / -075
	max.	12	70	
pH::lyser pro (pH, temp)	min.	0	0	E-514-3-000 / -075
	max.	14	90	

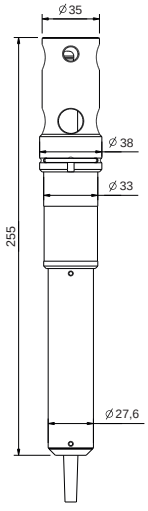
redo::lyser

redo::lyser monitors ORP and temperature

redo::lyser pro: high temperature range

- s::can plug & measure
- measuring principle: unique, non-porous / non-leaking combined reference electrode for technically unrivalled and consistend ORP performance
- multiparameter sensor
- ideal for surface water, ground water and drinking water, also waste water
- long term stable and maintenance free in operation
- factory precalibrated
- mounting and measurement directly in the media (InSitu) or in flow cell
- operation via s::can terminals & s::can software
- plug connection or fixed cable





recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-xxx	con::lyte
C-1-010-sensor	1 m connection cable for s::can physical and ISE probes
F-12-sensor	carrier s::can physical probes
F-45-four	flow cell for four s::can physical probes
F-46-four-iscan	i::scan flow cell for up to 3 additional s::can probes
F-45-sensor	flow cell for s::can sensor
S-11-xx-moni	moni::tool Software

technical specification

measuring principle	potentiometric
measuring principle detail	combined, non-porous reference electrode
resolution	1 mV
accuracy (standard solution)	+/- 10 mV
response time (T90)	30 ... 0 sec.
integrated temperature sensor	0 ... 90 °C
integration via	con::lyte con::nect
power supply	9 ... 18 VDC
power consumption (typical)	0.8 W
power consumption (max.)	1 W
interface to s::can terminals	sys plug (IP67), RS485
cable length	7.5 m fixed cable (-075) or plug connection (-000)
housing material	stainless steel 1.4404/1.4401, POM-C

weight (min.)	400 g
dimensions (Ø x l)	33 x 257 mm
operating pressure	0 ... 10 bar
installation / mounting	submersed or in a flow cell
process connection	quick connect
flow velocity	0.01 m/s (min.) 3 m/s (max.)
automatic cleaning	media: compressed air permissible pressure: 3 ... 6 bar
storage temperature (electrode)	-5 ... 30 °C
storage temperature (sensor)	-10 ... 60 °C
conformity - EMC	EN 61326-1
conformity - safety	EN 61010-1
operating temperature (eco)	0 ... 70 °C
operating temperature (pro)	0 ... 90 °C
protection class (-000)	IP67
protection class (-075)	IP68

measuring range

		parameter		
		redox [mV]	temperature [°C]	part number
redo::lyser eco (ORP, temp)	min.	-2000	0	E-513-2-000 / -075
	max.	2000	70	
redo::lyser pro (ORP, temp)	min.	-2000	0	E-513-3-000 / -075
	max.	2000	90	

condu::lyser

condu::lyser monitors conductivity, temperature & salinity*

- s::can plug & measure
- measuring principle condu::lyser: 4-electrode, direct-contact measurement
- multiparameter sensor
- ideal for surface water, ground water, drinking water and waste water
- long term stable and maintenance free in operation
- factory precalibrated
- mounting and measurement directly in the media (InSitu) or in a flow cell
- operation via s::can terminals & s::can software
- plug connection or fixed cable
- parameter conductivity or salinity

recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-xxx	con::lyte
C-1-010-sensor	1 m connection cable for s::can physical and ISE probes
F-12-sensor	carrier s::can physical probes
F-45-four	flow cell for four s::can physical probes
F-46-four-iscan	i::scan flow cell for up to 3 additional s::can probes
F-45-sensor	flow cell for s::can sensor
S-11-xx-moni	moni::tool Software

technical specification

measuring principle	4-electrode, direct-contact
resolution	1 µS/cm or 0.01 mS/cm or 0.1 PSU
accuracy (standard solution)	0.1% of reading
automatic compensation instrument	temperature
integrated temperature sensor	-20 ... 90 °C
integration via	con::lyte con::nect
power supply	7 ... 30 VDC
power consumption (typical)	0.06 W
power consumption (max.)	0.15 W
interface to s::can terminals	sys plug (IP67), RS485
cable length	7.5 m fixed cable (-075) or plug connection (-000)
housing material	Stainless steel 1.4435, FDA-approved PEEK, POM-C

weight (min.)	240 g
dimensions (Ø x l)	33 x 237 mm
operating temperature	0 ... 70 °C
operating pressure	0 ... 20 bar
installation / mounting	submersed or in a flow cell
process connection	quick connect
flow velocity	0.01 m/s (min.) 3 m/s (max.)
automatic cleaning	media: compressed air permissible pressure: 2 ... 6 bar
storage temperature	0 ... 60 °C
conformity - EMC	EN 61326-1
protection class (-000)	IP67
protection class (-075)	IP68

measuring range

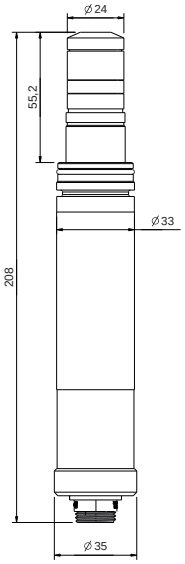
		parameter			
		conductivity [µS/cm]	temperature [°C]	salinity* [PSU]	part number
condu::lyser	min.	0	0	2	E-511-2-000 / -075
	max.	500000	70	42	

* Salinity measurement ist only possible in combination with con::cube terminal

chlori::lyser

chlori::lyser monitors free chlorine (Cl2 + HOCl + OCl-)
or total chlorine (free chlorine + combined chlorine)

- s::can plug & measure
- measuring principle: amperometric (membrane covered)
- ideal for drinking and pool
- long term stable and lowest maintenance in operation
- replacement of membrane only once a year
- readings stable even at high fluctuations of pH, temperature and flow
- compensates fluctuations of pH in an unmatched way pH range from 4 to 9 FCl; pH range from 4 to 12 TCl
- low cross sensitivity to many surfactants
- factory precalibrated
- mounting and measurement in a flow cell
- operation via s::can terminals & s::can software
- additionally also measures temperature



recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-xxx	con::lyte
S-11-xx-moni	moni::tool Software
F-45-four	flow cell for four s::can physical probes
C-1-010-sensor	1 m connection cable for s::can physical and ISE probes
E-525-1/2-KIT	Total Chlorine electrolyte and membrane cap (spare parts)
E-520-1/2-KIT	Free Chlorine electrolyte and membrane cap (spare parts)
F-45-flow-1	Automatic flow control unit
F-45-alarm	Flow detector unit

technical specification

measuring principle	amperometric
measuring principle detail	potentiostatic 3-electrode system
resolution	E-520-1 and E-525-1: 0.001 mg/l E-520-2 and E-525-2: 0.01 mg/l)
automatic compensation instrument	temperature
automatic compensation cross sensitivities	pH
response time (T90)	2 min.
integration via	con::lyte con::nect
power supply	9 ... 30 VDC
power consumption (typical)	0.5 W
power consumption (max.)	0.6 W
interface to s::can terminals	sys plug (IP67), RS485

housing material	PVC Stainless steel 1.4571
weight (min.)	150 g
dimensions (Ø x l)	35 x 208 mm
operating temperature	0 ... 45 °C
operating pressure	0 ... 3 bar
installation / mounting	flow cell
process connection	quick connect
recomended flow	15 ... 30 l/h (in s::can flow cell)
pH range free chlorine	4 ... 9
pH range TCl	4 ... 12
storage temperature	0 ... 45 °C
conformity - EMC	EN 61326-1

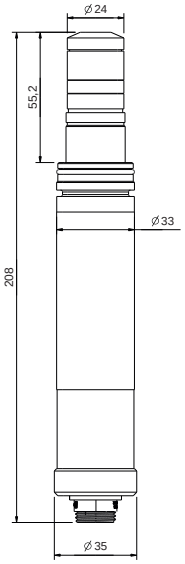
measuring range

		parameter			
		free chlorine [mg/l]	total chlorine [mg/l]	temperature [°C]	part number
chlori::lyser (FCl)	min.	0		0	E-520-1-000
	max.	2		45	
chlori::lyser (FCl)	min.	0		0	E-520-2-000
	max.	20		45	
chlori::lyser (FCl)	min.		0	0	E-525-1-000
	max.		2	45	
chlori::lyser (FCl)	min.		0	0	E-525-2-000
	max.		20	45	

chlodi::lyser

chlodi::lyser monitors chlorine dioxide (CLD)

- s::can plug & measure
- measuring principle: amperometric (membrane covered)
- ideal for all kinds of water treatment
- long term stable and lowest maintenance in operation
- replacement of membrane only once a year
- readings stable even at high fluctuations of pH, temperature and flow
- strong surfactants are tolerated
- factory precalibrated
- mounting and measurement in a flow cell
- operation via s::can terminals & s::can software
- additionally also measures temperature



recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-xxx	con::lyte
C-1-010-sensor	1 m connection cable for s::can physical and ISE probes
E-528-1/2-KIT	Chlorine Dioxide electrolyte and membrane cap (spare parts)
F-45-four	flow cell for four s::can physical probes
F-45-sensor	flow cell for s::can sensor
S-11-xx-moni	moni::tool Software

technical specification

measuring principle	amperometric
measuring principle detail	potentiostatic 2-electrode system, membrane covered
resolution	0.001 mg/l for 0 - 2 mg/l 0.01 mg/l for 0 - 20 mg/l
automatic compensation instrument	temperature
response time (T90)	1 min.
integration via	con::lyte con::nect
power supply	9 ... 30 VDC
power consumption (typical)	0.5 W
power consumption (max.)	0.6 W
interface to s::can terminals	sys plug (IP67), RS485

housing material	PVC Stainless steel 1.4571
weight (min.)	150 g
dimensions (Ø x l)	35 x 208 mm
operating temperature	0 ... 50 °C
operating pressure	0 ... 1 bar
installation / mounting	flow cell
process connection	quick connect
recomended flow	15 ... 30 l/h (in s::can flow cell)
pH range	1 ... 12
storage temperature	0 ... 45 °C
conformity - EMC	EN 61326-1
protection class (-000)	IP67

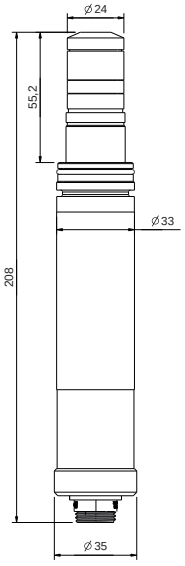
measuring range

		parameter		
		chlorine dioxide [mg/l]	temperature [°C]	part number
chlodi::lyser	min.	0	0	E-528-1-000
	max.	2	50	
chlodi::lyser	min.	0	0	E-528-2-000
	max.	20	50	

hyper::lyser

hyper::lyser monitors hydrogen peroxide (H2O2)

- s::can plug & measure
- measuring principle: amperometric (membrane covered)
- ideal for all kinds of water treatment
- long term stable and lowest maintenance in operation
- replacement of membrane only once a year
- readings stable even at high fluctuations of pH, temperature and flow
- strong surfactants are tolerated
- factory precalibrated
- mounting and measurement in a flow cell
- operation via s::can terminals & s::can software
- additionally also measures temperature



recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-xxx	con::lyte
C-1-010-sensor	1 m connection cable for s::can physical and ISE probes
E-509-1/2-EL	Hydrogen Peroxide electrolyte (spare part)
E-509-1/2-SET	Hydrogen Peroxide membrane cap (spare part)
F-45-four	flow cell for four s::can physical probes
F-45-sensor	flow cell for s::can sensor
S-11-xx-moni	moni::tool Software

technical specification

measuring principle	amperometric
measuring principle detail	potentiostatic 2-electrode system, membrane covered
resolution	0.1 mg/l for 0 - 200 mg/l 1 mg/l for 0 - 2000 mg/l
automatic compensation instrument	temperature
response time (T90)	5 ... 10 min.
integration via	con::lyte con::nect
power supply	9 ... 30 VDC
power consumption (typical)	0.5 W
power consumption (max.)	0.6 W
interface to s::can terminals	sys plug (IP67), RS485

housing material	PVC Stainless steel 1.4571
weight (min.)	150 g
dimensions (Ø x l)	35 x 208 mm
operating temperature	0 ... 45 °C
operating pressure	0 ... 1 bar
installation / mounting	flow cell
process connection	quick connect
recomended flow	15 ... 30 l/h (in s::can flow cell)
pH range	2 ... 11
storage temperature	0 ... 45 °C
conformity - EMC	EN 61326-1
protection class (-000)	IP67

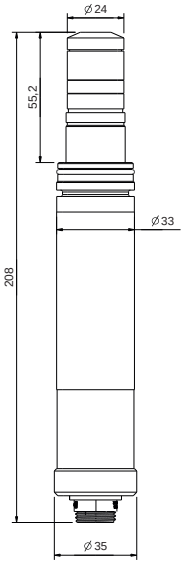
measuring range

		parameter		
		hydrogen peroxide [mg/l]	temperature [°C]	part number
hyper::lyser	min.	0	0	E-509-1-000
	max.	200	45	
hyper::lyser	min.	0	0	E-509-2-000
	max.	2000	45	

peroxy::lyser

peroxy::lyser monitors peracetic acid (PAA)

- s::can plug & measure
- measuring principle: amperometric (membrane covered)
- ideal for all kinds of water treatment
- long term stable and lowest maintenance in operation
- replacement of membrane only once a year
- readings stable even at high fluctuations of pH, temperature and flow
- strong surfactants are tolerated
- not cross sensitive to high concentrations of hydrogen peroxide
- factory precalibrated
- mounting and measurement in a flow cell
- operation via s::can terminals & s::can software
- additionally also measures temperature



recommended accessories	
part number	**article name**
D-330-xxx	con::cube V3
D-320-xxx	con::lyte
C-1-010-sensor	1 m connection cable for s::can physical and ISE probes
F-45-four	flow cell for four s::can physical probes
F-45-sensor	flow cell for s::can sensor
S-11-xx-moni	moni::tool Software
E-515-1/2-SET	Peracetic Acid membrane cap (spare part)
E-515-1/2-EL	Peracetic Acid electrolyte (spare part)

technical specification

measuring principle	amperometric
measuring principle detail	potentiostatic 2-electrode system, membrane covered
resolution	0.1 mg/l for 0 - 200 mg/l 1 mg/l for 0 - 2000 mg/l
automatic compensation instrument	temperature
response time (T90)	1.5 ... 5 min.
integration via	con::lyte con::nect
power supply	9 ... 30 VDC
power consumption (typical)	0.5 W
power consumption (max.)	0.6 W
interface to s::can terminals	sys plug (IP67), RS485

housing material	PVC Stainless steel 1.4571
weight (min.)	150 g
dimensions (Ø x l)	35 x 208 mm
operating temperature	0 ... 45 °C
operating pressure	0 ... 1 bar
installation / mounting	flow cell
process connection	quick connect
recomended flow	15 ... 30 l/h (in s::can flow cell)
pH range	1 ... 6
storage temperature	0 ... 45 °C
conformity - EMC	EN 61326-1
protection class (-000)	IP67

measuring range

		parameter		
		PAA [mg/l]	temperature [°C]	part number
peroxy::lyser	min.	0	0	E-515-1-000
	max.	200	45	
peroxy::lyser	min.	0	0	E-515-2-000
	max.	2000	45	

s::can
A Badger Meter® Brand

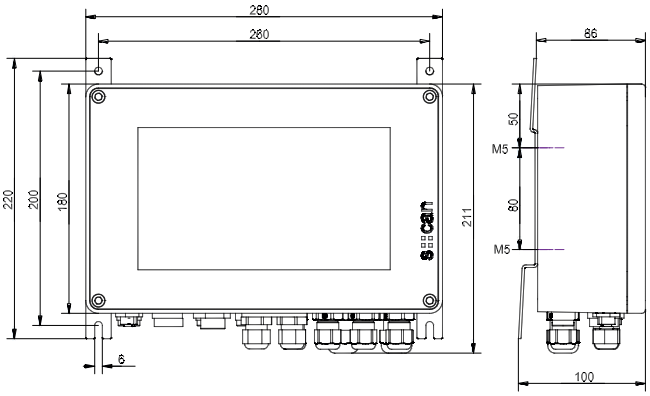
Terminals

con::cube V3

con::lyte

con::cube V3

- s::can high-end IoT (Internet of Things) terminal based on an industrial PC, IP65
- widescreen color graphical display (9") and touch screen
- highly intuitive use, informative visualization & easy operation: time series, optical spectra and all events in clear text
- sensor and station management of up to 64 parameters: automatic cleaning, data logging, sample & calibration including history and multipoint calibration, sensor function check, user management and easy data transfer via USB-stick
- low power operation with less than 3 watts (@ 15 min. measuring interval): wide range AC and DC variants available
- IoT (Internet of Things) and M2M (Machine to Machine) connectivity: 1000 Mb/s Ethernet, 300 Mb/s WLAN and optional worldwide LTE, HSPH+, GSM 4G interface, remote control (https) and data transfer into "Cloud" via (S)FTP, SSH und RSYNC
- process interface to SCADA via Modbus RTU/TCP, SDI-12, Profibus DP, analog 0/4-20 mA and relay outputs (state)
- integration of third-party sensors via analog 0/4-20 mA and digital (solid state) inputs, Modbus RTU/TCP
- easily extendable & all moni::tool features available: 8 slots to customize I/Os, moni::tool software pre-installed, additional software features like online data validation and event detection optional



standard accessories	
part number	**article name**
S-11-04-moni	moni::tool - Basic s::can monitoring station software for 4 parameters
D-303-LX	Linux Application Licence (obligatory to D-330)
D-315-out-relay	4 digital outputs (output module), provides 4 configurable relay contacts 1A
D-315-out-SDI12	SDI 12 (output module), provides SDI 12 for data transfer to PLC systems
D-315-out-mA	2 analogue outputs (output module), provides data transfer to PLC systems
D-315-in-mA	2 analogue inputs (input module), provides 2 analogue inputs (4-20mA) for integration of 3rd party readings
D-315-in-relay	2 digital inputs (input module), provides 2 digital IN (5-24V) for integration of 3rd party readings
D-315-out-profibus	provides Profibus DPV0 for data transfer to PLC systems

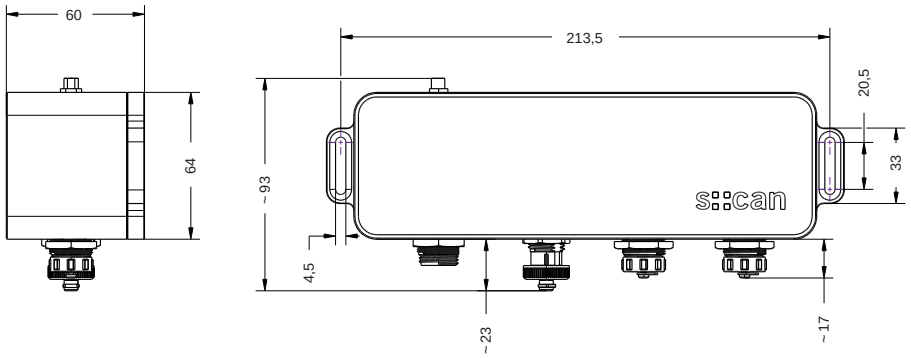
technical specification	
integration of	1 x s::can spectrometer probe and 4 x s::can sensors or ISE probes
display	color-display 9" TFT
function indicator	4 x LED
operation via	integrated touch-screen (optional) Ethernet - Browser or VNC WIFI - Browser or VNC USB (keyboard, mouse) 4G modem (optional)
operating system	Linux
main memory	2 GB RAM
onboard memory	16 GB
interface to s::can spectrometric probes	M12 RSTS 8Y (IP67), RS485, Ethernet
interface to s::can sensors	4 x sys plug, RS485
interface to third party sensors	Modbus RTU/TCP, analog inputs
network connection	802.11n a/b/g WIFI 300Mb/s Ethernet LAN 1 Gb/s worldwide 4G (optional)
interface to SCADA	Modbus RTU/TCP, Profibus DP (optional), SDI-12 (optional), analog outputs
data transfer	via SSH, FTP, SFTP, RSYNC and USB stick
remote control	via http, https

power supply	D-330-230: 100 ... 240 VAC D-330-024: 10 ... 36 VDC
power consumption (typical)	1.5 W (in sleep mode) 10 W (no analogue ports) 30 W (fully equipped)
power consumption (max.)	20 W (no analogue ports) 60 W (fully equipped)
grounding	<0.5 Ohm to process media
analog outputs	up to 8x2 x 0/4-20 mA
analog inputs	up to 8x2 x 0/4-20 mA
outputs for automatic cleaning	2
digital inputs	up to 8x2 x 14 VDC
relay outputs	4 x 2A (500 VAC)
system error relay	1 x 2A (500 VAC)
dimensions (width x height x depth)	280 x 209 x 85 mm
housing material	aluminium alloy, powder coated
weight (min.)	4 kg
operating temperature	-20 ... 50 °C
storage temperature	-20 ... 60 °C
storage humidity	5 ... 90 %
ingress protection class	IP65
conformity - EMC	EN 61326-1
conformity - safety	IEC/EN/UL/CSA 61010-1 IEC/EN/UL/CSA 61010-2-201 IEC/EN 60529
part number 24V	D-330-024
part number 230V	D-330-230

recommended accessories	
part number	**article name**
C-31-eu	Optional 2 m power cable
C-31-us	Optional 2 m power cable
D-330-anten-na-pro	External, high range antenna option for con::cube, incl. 3 m extension cable
D-330-ANTEN-NA-PLUG	Internal antenna adapter cable and connector, option for con::cube
D-330-ANTEN-NA-CABLE	10 m antenna extension cable
S-11-autosam-pler	moni::tool - auto sampler feature
S-11-basic-PLC	moni::tool - basic PLC functionality (time control, pulsing, custom bits)
S-11-camera	moni::tool - camera input
S-11-data-export	moni::tool - automatic data transfer (via SSH, FTP, TML)
S-11-free-for-mula	moni::tool - configureable mathematic formula
S-11-SMS	moni::tool - SMS notification
S-14-vali	vali::tool - s::can data validation software
S-15-ana	ana::tool - s::can event detection software
F-51	weather shield for s::can terminals
S-20-MVA	Complete license of all moni::tool modules, vali::tool and ana::tool
D-330-4GLX	Worldwide 4G internet connection via 7-band HSPA+ (21 Mbps/5.7 Mbps)

con::line

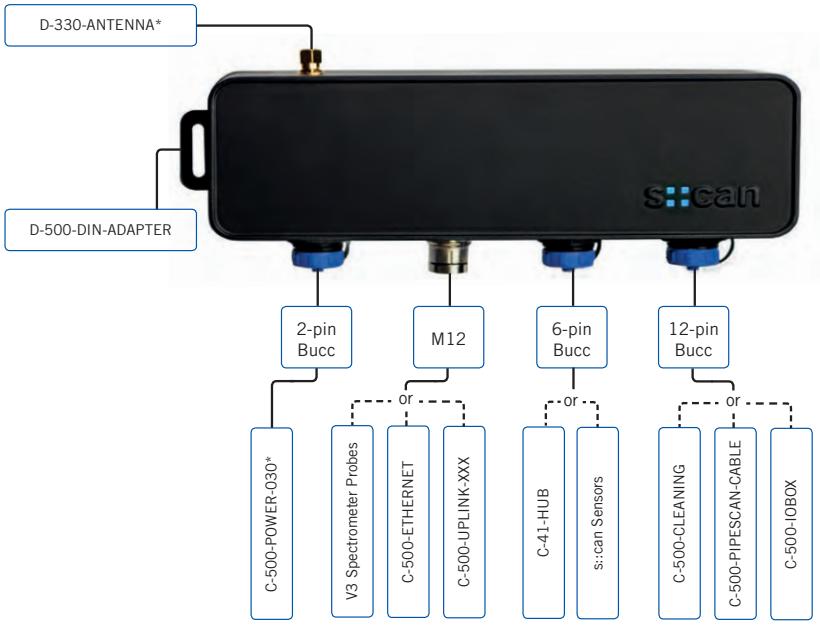
- s::can's low power terminal for battery operated, remote water quality monitoring
- 4G data communication to any cloud system through secure SFTP or SCP connections
- direct plug connection to s::can's pipe::scan and s::can probes
- on board storage of measurement data up to one year
- local access to terminal through WLAN interface using lo::Tool
- MODBUS TCP or MODBUS RTU uplink to SCADA systems



technical specification	
onboard memory	8 GB
interface to s::can sensors	modbus RTU through 6-pin buccaneer plug (sensors) and 12 pin buccaneer plug (pipe::scan)
interface to third party sensors	2 x multi-purpose inputs: current OR voltage OR pulse counting
network connection	built-in 4G LTE connection
local operation	lo::Tool through WLAN
antennas	CELLULAR. 2J2124B-B05H with 3 m cable 4G / WLAN: built-in antenna
antenna plug	SMA (fm)
frequency bands	GSM, DCS, WCDMA, LTE, GNSS
interface to SCADA	modbus RTU and TCP (through M12 plug)
cleaning device support	ruck::sack, auto::brush, cleaning valve
cloud transfer	CSV file push through SFTP, SCP REST API data pull
device updates	local or over the air update
power supply	external 2-pin buccaneer plug 9-18V DC, <1,5 A
power consumption (typical)	1.5 W without sensors
power consumption (sleep model)	< 50 mW
power consumption (max.)	18 W with full sensor load
SIM card format	2FF
data security	TLS 1.3, SSH encryption, hardware encryption of data
remote configuration	config file pull from server
supply outputs	1 x 12V 6 pin buccaneer, 4 x 12V 12 pin buccaneer (shared between sensors and cleaning devices), 1 x 5V 12 pin buccaneer individually switchable
dimensions (width x height x depth)	22,6 x 6,0 x 6,4 cm
housing material	polyurethane
weight (min.)	approx. 500 g (1.1 lbs)
operating temperature	-20 ... 60 °C
installation / mounting	direct wall mounting, top hat rail mounting with adapters
ingress protection class	IP67
part number	D-500-012
certified according to	RED, FCC, ISED, PTCRB

recommended accessories	
part number	**article name**
S-500-08-IO	Io::Tool - s::can monitoring station software for 8 parameters
D-500-DIN-ADAPTER	DIN Rail mounting set (for con::line)
C-500-CLEANING	adapter for autobrush/ruck::sack/B44 claning valve for con::line, IP68
C-500-ETHERNET	network adapter cable 30 cm
C-500-PIPESCAN-CABLE	12 pin Buccaneer to pipe::scan hub, 10 m cable
C-500-POWER-030	power cable (con::line), 2 pin Buccaneer (loose ends), 3 m cable
C-500-UPLINK-010	M12 modbus/ethernet to SCADA for con::line (loose ends) 1 m cable
C-500-UPLINK-075	M12 modbus/ethernet to SCADA for con::line (loose ends) 7.5 m cable
C-500-IO-BOX	adapter box 12 pin Buccaneer to terminal clamps, 0.5 m cable IP67, 2 cable glands

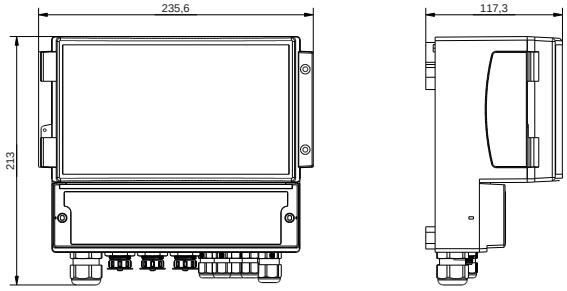
con::line connections



* Included in the scope of delivery

con::lyte

- low-cost terminal for control applications
- power efficient LCD display and ergonomic UI
- sensor and station management of up to 2 (eco) or 6 (pro) parameters
- control of automatic cleaning, data logging, sample & calibration, sensor function check and easy data transfer via USB-stick
- process interface to SCADA or con::cube via Modbus RTU, Profibus DP, analog 4-20 mA and relay outputs (state/PWM/Pulse)
- integration of third-party sensors via analog and digital I/Os
- outstanding control features: easy threshold and alarm limits with hysteresis, 3 opt. PID or 2-point controllers
- certifications: CE, UL, CSA and RCM



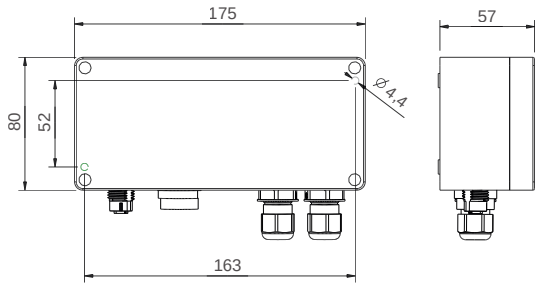
technical specification	
display	LCD
function indicator	2 x LED
operation via	keypad
onboard memory	512 MB
interface to SCADA	Modbus RTU (optional), Profibus DP (optional), analog outputs
data transfer	USB stick
power supply	100-240 VAC (50-60 Hz)
power consumption (max.)	25 W
analog inputs	1 x 0/4-20 mA
outputs for automatic cleaning	1 (2nd cleaning device via relay output)
digital inputs	2
digital input flow detector	1
relay outputs	2 x 6A (600 VAC)
system error relay	1 x 6A (600 VAC)
dimensions (width x height x depth)	235.6 x 213 x 117.3 mm
housing material	PC
weight (min.)	1300 g
operating humidity	5 ... 90 %
storage temperature	-20 ... 50 °C
storage humidity	5 ... 90 %
ingress protection class	IP65
conformity - EMC	EN 61326-1
conformity - safety	EN 61010-1
conformity - RoHS 2	EN 50581

con::lyte eco (2 parameters)	
integration of	1 x i::scan, s::can sensor or s::can ISE probe
interface to s::can sensors	1 x sys plug, RS485
analog outputs	2 x 4-20 mA
operating temperature (eco)	-20 ... 45 °C
part number 230V	D-320-eco-230
con::lyte pro (6 parameters)	
integration of	pro1: i::scan, s::can sensors/ISE probes; pro2: s::can G::series, i::scan, s::can sensors/ISE probes
interface to s::can spectrometric probes	D320-pro2: 1 x MIL, RS485
interface to s::can sensors	D-320-pro1: 3 x sys plug, RS485 D-320-pro2: 2 x sys plug, RS485
analog outputs (optional license)	3 x 4-20 mA
analog outputs (optional module)	2 x 4-20 mA / 4 x 4-20 mA
operating temperature (pro1)	-20 ... 45 °C
operating temperature (pro2)	-20 ... 50 °C
part number 230V	D-320-pro1-230, D-320-pro2-230

recommended accessories	
part number	**article name**
C-31-eu	Optional 2 m power cable
C-32-V3	Adapter cable to connect a V3 spectrometer (M12) to V2 Terminal (MIL Plug)
D-319-logger	Datalogger option for con::lyte
D-319-out-profibus	Profibus (output module for con::lyte)
D-320-PID	3 x PID control output for con::lyte D-320
D-320-out-mA	License for 3 analog outputs (4-20 mA) for con::lyte pro
D-319-out-mA	2 x 4 - 20 mA (output module for con::lyte)

con::nect V3

- s::can connection device for one spectrometer V3 probe and one cleaning device
- expand con::cube/con::lyte sensors networks (longer distances and higher number of sensors)
- operation of one s::can spectrometer V3 probe
- RJ45 connector for wired network access



technical specification	
integration of	1 x s::can spectrometer V3 probe with one cleaning device
operation via	via PC / notebook / any third party device
interface to s::can spectrometric probes	M12 RSTS 8Y (IP67), RS485, Ethernet
interface to PC	Ethernet (RJ45)
interface to SCADA	REST API / RS485
data transfer	via PC (visu::tool)
power supply	12 VDC
power consumption (max.)	passive device
outputs for automatic cleaning	1
dimensions (width x height x depth)	80 x 175 x 57 mm (w/o cable bushing)
housing material	AlSi12, powder coated
weight (min.)	600 g
operating temperature	-20 ... 50 °C
storage temperature	-20 ... 50 °C
ingress protection class	IP65
part number	B-33-012

recommended accessories	
part number	**article name**
S-31-visu (visu::tool lyte) S-34-visu (visu::tool pro)	visu::tool lyte/pro - Data Visualisation and Analysis Tool
C-31-eu	Optional 2 m power cable
C-31-us	Optional 2 m power cable

Software

moni::tool™

vali::tool ana::tool

A true software revolution that changes the face of water quality monitoring, data validation and event detection!

Why use monitoring station software?

The rising popularity of online sensors means that ever increasing amounts of data are collected. Online results increase the understanding of water quality, but the amount of data can be so enormous that it is impossible to manually verify and interpret the data. Automatic validation and event detection is therefore crucial to exploit the potential of online monitoring.

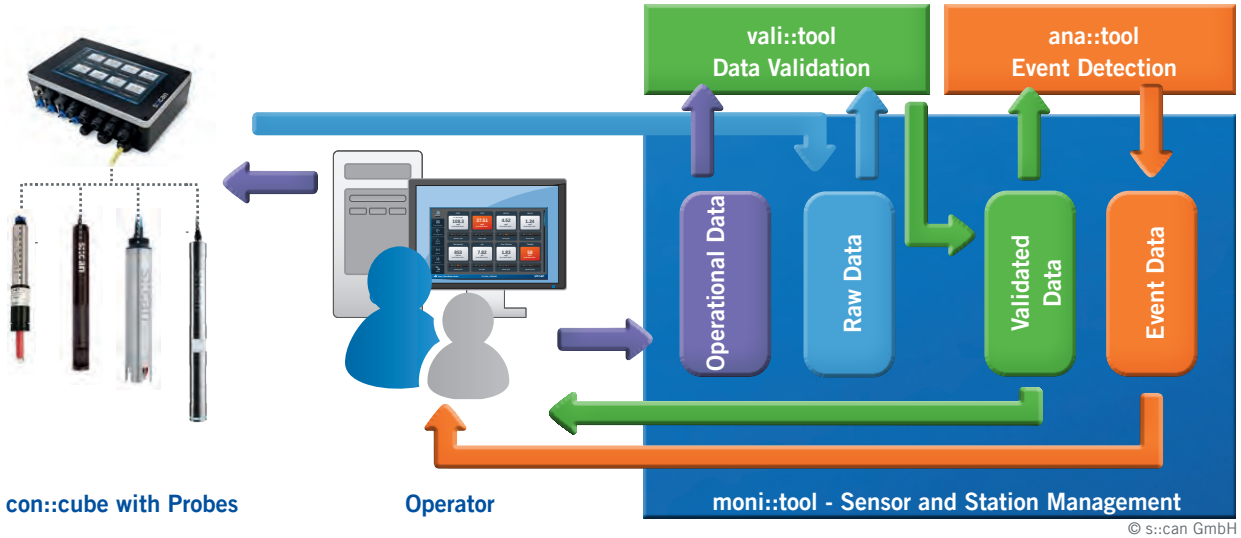
What is special about moni::tool?

s::can has developed a modular software package to improve data availability and quality. The concept looks at the whole system: hardware, software and operator. Only this all enveloping approach can guarantee that operational control and / or event detection work reliably. Using raw, unvalidated information for control or event detection will result in a high false alarm rate or in poor sensitivity.

The modular approach:

The s::can software package for water quality monitoring is split into three modules:

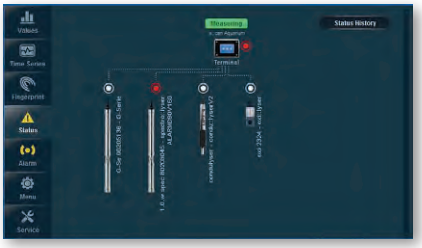
- moni::tool™ - Sensor and Station Management
  Provides management of probes and stations. It documents critical manipulations, from user login to maintenance and logbook keeping. It also has intuitive visualization tools to display all information in a clear and easy to understand format.
- vali:.tool - Data Validation
  Automatically detects, marks and (optionally) corrects untrustworthy data. It ensures only high quality data are fed into the event detection module. It also provides the user with indications on sensor maintenance requirements, as well as automatic detection of malfunctions.
- ana::tool - Event Detection
  With ana::tool your existing simple water quality monitoring station morphs into a fail-safe EDS-system!

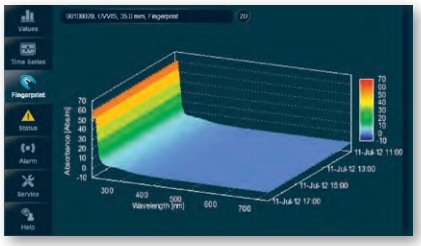


moni::tool™

Sensor and Station Management

moni::tool™ is a revolutionary new platform for the management of an almost unlimited number of stations, online probes, analyzers and parameters. Intuitive operation - on site or remote - and reams of valuable features make moni::tool™ essential for state of the art sensor and station management.





Want to try moni::tool?
... visit monitool.s-can.at!

moni::tool™ - Basic Features

- Management for an almost unlimited number of stations, sensors and parameters
- Automatic installation of all s::can sensors
- Open platform talks to any sensor type (analog 0/4-20 mA, MODBUS RTU/TCP, solid state)

- Impressive real-time zoomable, scrollable graphical visualization of all historical data including 3D-optical spectra
- Optimal display readability with Classic-, Day- and Night-Mode

- Easy customization of tools, devices and protocols
- Clear text help messages
- Available languages: German, English, Chinese, Japanese, Spanish, France and Turkish

- Smart-phone-style, easy to use touch interface allows intuitive operation by non-expert staff
- Minimal user input necessary, Few input options = few input mistakes
- User management: Basic / Advanced / Expert user level

- Quality controlled and documented status management of probes and stations eliminates the need for paper log books
- Station and probe management for 100% transparent documentation

- Can be used in a small monitoring station as well as in the heart of a large central data collection system
- Large local database for collection and management of all incoming data
- Secure, automatic Data export

- Data Integration into any modern data exchange system
- Probes and stations can be accessed from any suitable device
- Can be run from any standard web browser e.g. via PC, Tablet, Notebook or Smart Phone

- Protected by a user-configurable firewall

- Automatic probe cleaning

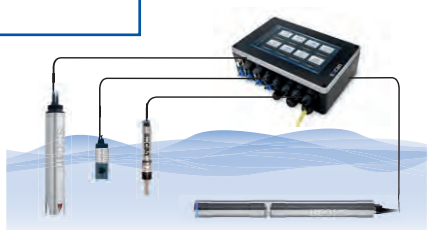
- Any parameter input of any type of probe can be fed in - managed and analyzed in real time
- Multi sample function to calibrate all installed probes with minimal effort

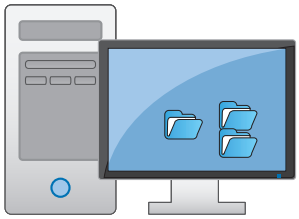
moni::tool™ - Additional Features

Automatic File Transfer

Automatic transfer of all relevant information from con::cube to your cloud and servers

- Customizable ASCII format (csv supported)
- Import to any spreadsheet application or database (e. g. Excel, visu::tool)
- SSH-Transfer, (S)FTP-Transfer and TML-Interface (XML-Based).

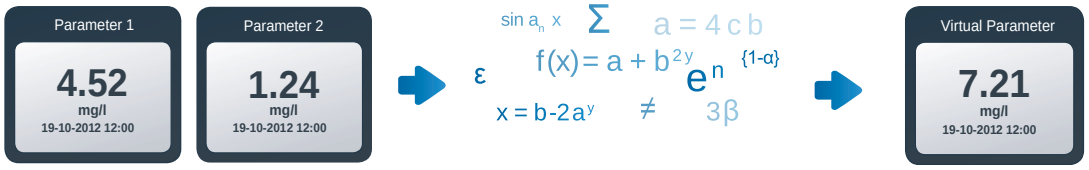




Free Formula

Offers to use virtual parameters based on online measurement results using a custom "free formula" (FF)

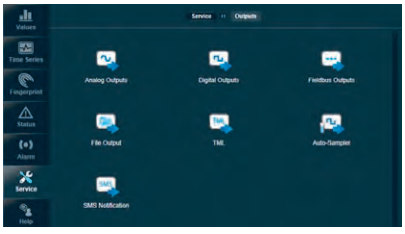
- Converts parameters/units, example: NO3-N can be converted to NO3
- Combines monitored parameters, example: COD and flow can be used to calculate load
- Long list of supported functions, example: multiple parameters including single wave-lenghts from a spectro::lyser fingerprint can be combined to create a custom Water Quality Index



SMS Notification

Sends a SMS in case a configurable condition occurs (this function uses the optional con::cube internal modem)

- Every digital output function can be used to trigger a SMS notification
- Example conditions: parameter reading over limit, event detected, failure with installation or sensor detected, etc.
- Customizable SMS message text

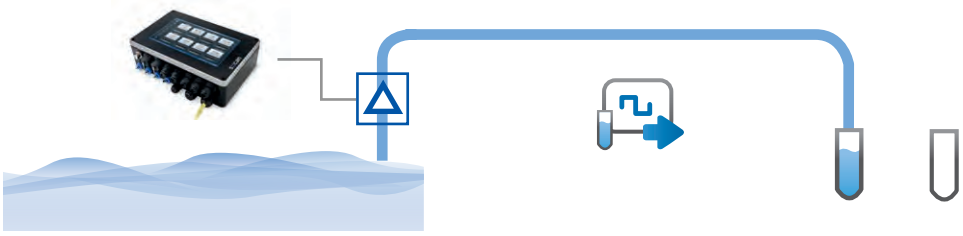


moni::tool™ - Additional Features

Auto Sampler

Create your own Auto-Sampler!

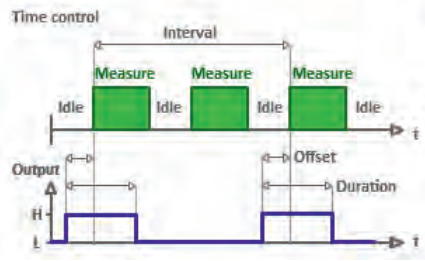
- Complete and flexible sample system
- Configure the conditions for taking samples
- Combine different conditions and program delays
- Control sample capacity either by a fill level detector or by a timer



PLC Tools

Enhance the process control functionality for the con::cube digital outputs

- Time Control
- Value Hysteresis downwards
- Pulsing

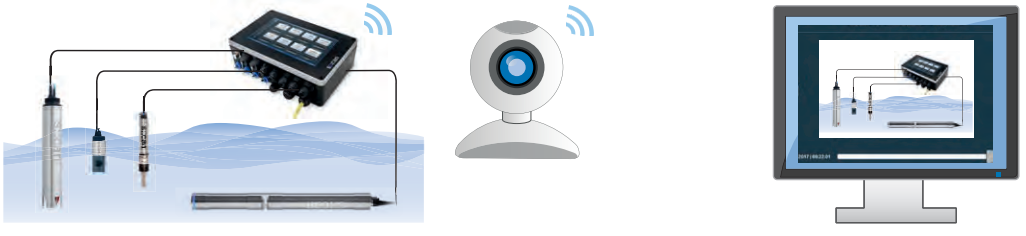


The output is time controlled by the the measurement cycle. Interval defines how often, Offset defines the relative position to the start of measurement and Duration defines how long the output is 'HIGH'.

Camera Integration

Automatically collect snapshots and watch live video stream

- Effective surveillance against vandalism
- Choose the interval of snapshots freely
- Review stored snapshots in a gallery
- Can be used with INSTAR and AXIS cameras



vali::tool

Data Validation

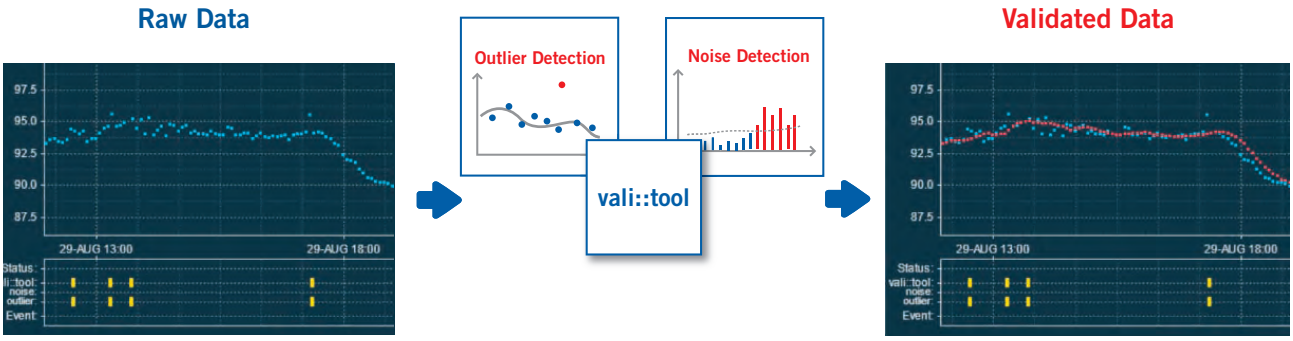
Automatic data validation makes sure that only unmarked, "clean" data are used for further analysis, training and alarms. Any non-event-related deviating data must be identified and marked before feeding them into the following event detection module.

Why is Data Validation before Event Detection important?

vali::tool automatically detects, marks and (optionally) corrects untrustworthy data, not by using mean average - it detects outliers, noise and checks for discontinuous data. It ensures only high quality data are fed into the event detection module (ana::tool). It also provides the user with indications on sensor maintenance requirements, as well as automatic detection of malfunctions.

How does vali::tool work?

The basic steps in the data validation are: outlier detection, noise detection and check for discontinuous data. The results of the data validation are presented as status information with the respective parameter and sensor. A station status symbol as well as a change in background color in the parameter display indicate that data quality is sub-optimal. Detailed notifications, including suggestions to remedy the issue or for maintenance, can be called up.



vali::tool - Highlights

- Provides self-adaptive, self-controlled data validation in real time
- Ensures both sensitive and reliable alarm limits respectively setpoints for process control
- Analyzes noise, outliers and other combinations in real time to reliably detect any malfunction at an early stage
- Considers user interventions in real-time
- Application-specific training period considers normal fluctuations of individual water matrix and typical process dynamics
- Helps to dramatically reduce false alarm rates
- Configurable auto-correction of data based on threshold, outlier and noise analysis

ana::tool

Event Detection for everyone

- **Affordable for everyone**
- **Best available EDS**
- **Simple, easy to use and automatic**

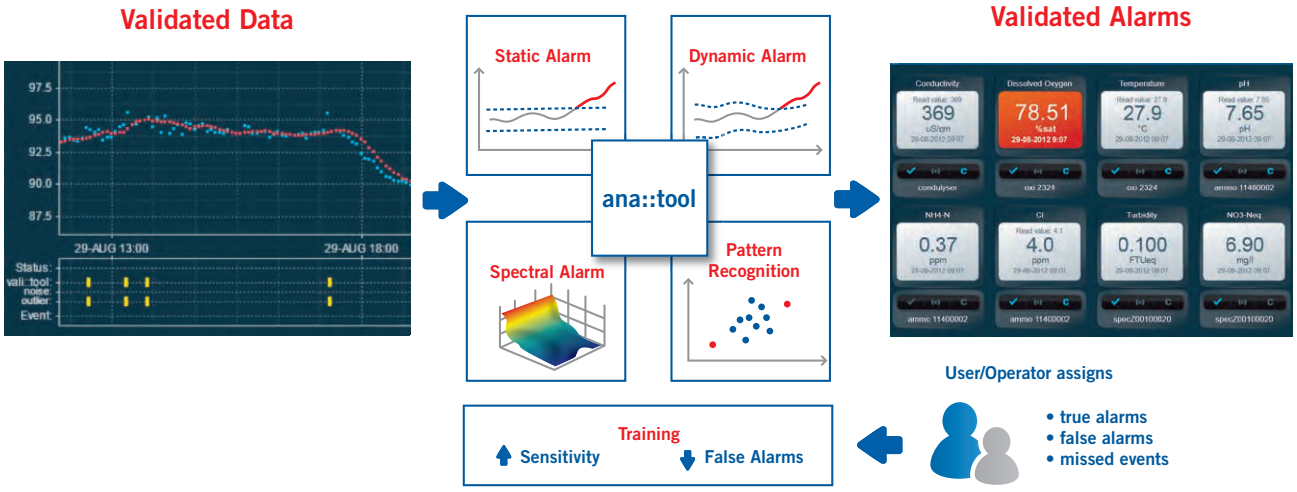
ana::tool turns your monitoring station into an Event Detection System!

ana::tool identifies unknown and unusual conditions and enables operators to react timely to faults in the monitored system, determines normality of these data and triggers an alarm when a significant deviation from normality is detected.

How does ana::tool work?

ana::tool evaluates measurement data that have been cleaned by the validation module. It identifies unknown and unusual conditions and enables operators to react timely to faults in the monitored system, determines normality of these data and triggers an alarm when a significant deviation from normality is detected. It combines Static Alarms, Dynamic Alarms, Pattern Recognition and Spectral Alarms.

Once an alarm is detected, the user has to provide feedback, so the system can learn what alarms are real and which ones represented normal changes in water quality. This will increase system performance over time. Gradual composition changes (e.g. seasonal variations) are accounted for by automatic training on a moving time window.



ana::tool - Highlights

- Unmatched event detection tool based on proven algorithms for real-time event detection that use data streams from all connected probes separately or in combination
- The only software developed by the market leader to be specifically capable of exploiting the enormous information contained in UV spectra which provide the most sensitive and stable data source for event detection
- ana::tool is optimized for use of multi-dimensional spectral data, but will also work with single or multiple one-dimensional inputs
- So far the only one commercial software package that was tested and found suitable by US-EPA water security division
- All event information is automatically aggregated into a "traffic light" output and a "% deviation from normal" output. Furthermore, analogue and digital outputs as well as text notifications can be triggered
- Trains itself on any type of data streams coming in, and will learn automatically which data are useful for event detection, and which ones not

moni::tool License Options

	free*	one time license fee											
	S-11-04-moni	S-11-08-moni	S-11-24-moni	S-11-64-moni	S-11-data-export	S-11-free-formula	S-11-SMS	S-11-autosampler	S-11-basic-PLC	S-11-camera	S-14-vali	S-15-ana	S-20-MVA
Basic Features	●	●	●	●									
4 Parameters	●												
8 Parameters		●											
24 Parameters			●										
64 Parameters				●									●
Automatic data transfer (via SSH, FTP, TML)					●								●
Configurable mathematical formula						●							●
SMS notification							●						●
Auto sampler feature								●					●
Basic PLC functionality (time control, pulsing, custom bits)									●				●
Camera input										●			●
vali::tool											●	●	●
ana::tool (includes vali:.tool)												●	●
Affordable license for all moni::tool features, vali::tool and ana::tool													●

* The basic features for 4 parameters come free of cost with every con::cube terminal

Upgrade

S-19-subscription	s::can annual upgrade package for moni::tool

Services

data::care packages	
S-18-data-4	data::care - quarterly data check and basic report (annual fee, online access required)
S-18-data-12	data::care - monthly data check and basic report (annual fee, online access required)
S-18-data-52	data::care - weekly data check and basic report (annual fee, online access required)
S-VPN-hosting	vpn::host - one year secure remote access from customer PC to con::cube via s::can VPN server
S-VPN-hosting-36	vpn::host - 36 months secure remote access from customer PC to con::cube via s::can VPN server

custom packages	
S-12-custom-tab	Custom moni::tool TAB, individual screen within moni::tool, completely adapted to customers requirements and applications, price on request after exact specification
S-12-custom-formula	Custom formula, individual sophisticated mathematical formulas and algorithms, price on request after exact specification

setup+training packages	
A-vf	vali::tool - setup & evaluation
A-af	ana::tool - training & evaluation

visu::tool lyte/pro - Data Visualisation and Analysis Tool

- visu::tool is a fast and easy-to-use data visualization software for PCs and notebooks
- in 3 simple steps you can visualize huge amounts of data from con::cube or con::lyte into single or multiple graphs
- the visu::tool “lyte” version is available for free download
- the advanced visu::tool “pro” version includes a vast amount of additional useful offline features such as data aggregation, fingerprint plots, parameter correlation
- read s::can files (.log, .par, .csv, .xlsx and .fp files)
- graphical user interface for parameter selection
- save data as Excel

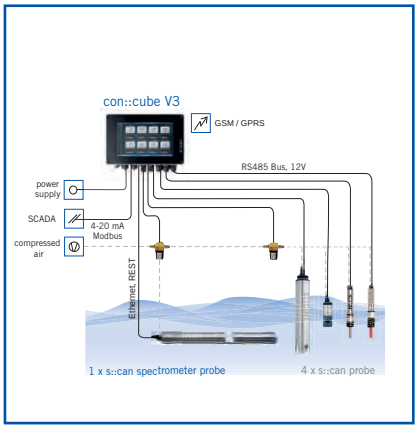
technical specification	
part number	S-31-visu (visu::tool lyte) S-34-visu (visu::tool pro)

moni::app

- moni::app is an app that allows you to have an overview of your data from the s::can terminal con::cube on your smartphone
- get the current state of your s::can monitoring station and analyze the data history
- check all parameters, time series, the water’s spectral fingerprint and even the status of all your sensors
- wherever you are, simply open the app and immediately find out what is going on in real-time
- you can download moni::app for free for Android via Google Play and iOS via the Apple Store

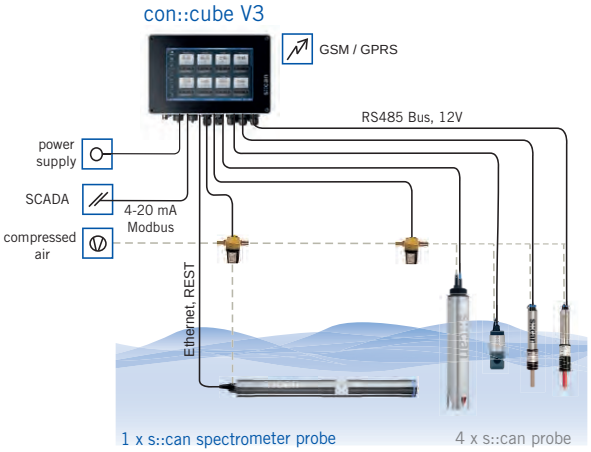
technical specification	
part number	S-50-moni-app

System Configuration



Plug & Measure - System Configuration for con::cube

- s::can high-end IoT (Internet of Things) terminal based on an industrial PC, IP65
- widescreen color graphical display (9") and touch screen
- highly intuitive use, informative visualization & easy operation: time series, optical spectra and all events in clear text
- sensor and station management of up to 64 parameters: automatic cleaning, data logging, sample & calibration including history and multipoint calibration, sensor function check, user management and easy data transfer via USB-stick
- low power operation with less than 3 watts (@ 15 min. measuring interval): wide range AC and DC variants available
- IoT (Internet of Things) and M2M (Machine to Machine) connectivity: 100 Mb/s Ethernet, 300 Mb/s WLAN and optional worldwide WCDMA 4G interface, remote control (http) and data transfer into "Cloud" via FTP, SSH and TML
- process interface to SCADA via Modbus RTU/TCP, SDI-12, Profibus DP, analog 0/4-20 mA and relay outputs (state)
- integration of third-party sensors via analog 0/4-20 mA and digital (solid state) inputs, Modbus RTU/TCP
- easily extendable & all moni::tool features available: 8 slots to customize I/Os, moni::tool software pre-installed, additional software features like online data validation and event detection optional
- process software moni::tool pre-installed; additional software tools (e.g. data validation or event detection) optional
- optional: operation in flow cell



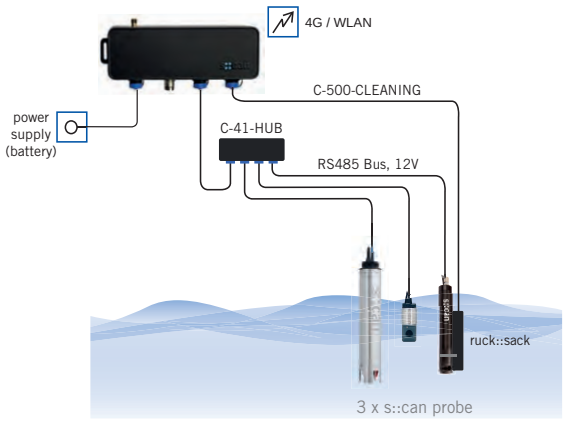
moni::app

visu::tool

Plug & Measure - System Configuration for con::line

- con::line low power terminal for battery operated, remote water quality monitoring
- 4G data communication to any cloud system through secure SFTP or SCP connections
- direct plug connection to s::can probes and s::can sensors
- on board storage of measurement data up to one year
- local access to terminal through WLAN interface using lo::Tool
- control of automatic cleaning
- MODBUS TCP or MODBUS RTU uplink to SCADA systems

con::line



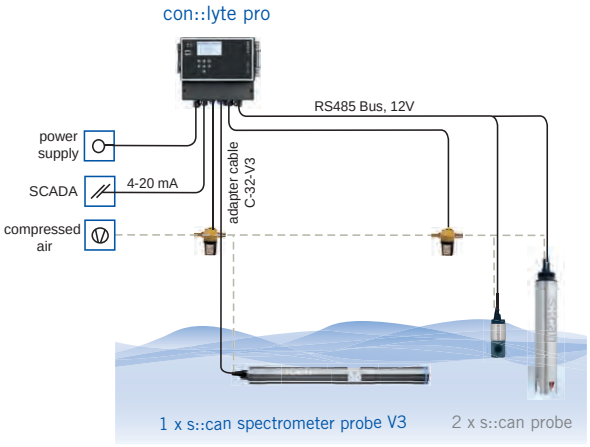
RADAR cloud data platform

visu::tool

lo::Tool (WLAN remote connection)

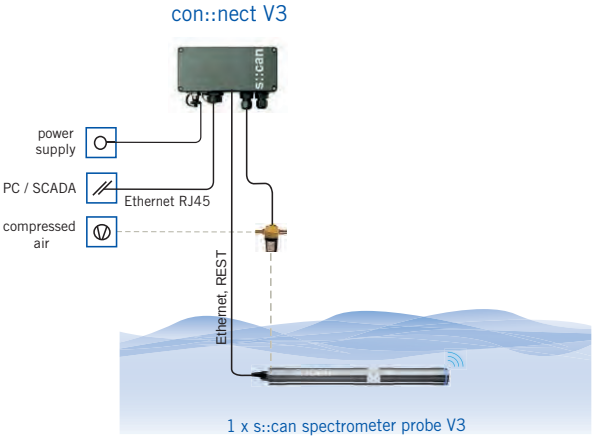
Plug & Measure - System Configuration for con::lyte pro

- s::can low-cost terminal designed for control applications
- power efficient LCD display and ergonomic user interface
- sensor and station management of up to 6 parameters
- control of automatic cleaning, data logging, sample & calibration, sensor function check and easy data transfer via USB-stick
- process interface to SCADA or con::cube via Modbus RTU, Profibus DP, analog 4-20 mA and relay outputs (state/PWM/Pulse)
- integration of third-party sensors via analog 0/4-20 mA input and digital (solid state/count) inputs
- outstanding control features: easy threshold and alarm limits with hysteresis, 3 optional PID or 2-point controllers
- certifications: CE, UL, CSA and RCM
- optional: operation in flow cell



Plug & Measure - System Configuration for con::nect V3

- s::can connection device for one spectrometer V3 probe and one cleaning device
- operation of one s::can spectrometer V3 probe
- expand con::cube/con::lyte sensors networks (longer distances and higher number of sensors)
- RJ45 connector for wired network access
- spectrometer probe V3 communicates directly with your mobile device via WLAN
- optional: operation in flow cell



s::can
A Badger Meter® Brand

pipe::scan

pipe::scan

pipe::scan for monitoring of drinking water quality

pipe::scan

The pipe::scan is a sensor system for monitoring drinking water quality in pipes under pressure. It measures up to 10 parameters in one device: TOC, DOC, UV254, Turbidity, Color, UVT, Chlorine, pH/Redox, Conductivity, Temperature and Pressure. The water quality data can be sent to any central database via almost any protocol. Multiple pipe::scans are the ideal solution to monitor drinking water at any point in the network.

Certificate of Sanitary Conformity

Certified to NSF/ANSI/CAN 61 & 372

- TOC
- DOC
- UV254
- Turbidity
- Color
- Chlorine
- pH/Redox
- Conductivity
- Temperature
- Pressure

i::scan
Multi-parameter spectrophotometer probe.

Parameters:
FTU/NTU, UV254, UVT, Color, TOC, DOC

Enclosure
Additional security for sensors and operator.

Physical sensors
One chlori::lyser and two additional sensors (condu::lyser, pH::lyser or redo::lyser) can be installed.

Parameters:
Conductivity, Free Chlorine, pH, Redox and Temperature

Optional autobrush for i::scan
Provides automatic brush cleaning for the i::scan.

Base unit
Flow cell for up to 4 sensors with retractable insertion nozzle, filter, sample valve, automatic bleeder valve, pressure sensor and flow sensor (optional).

Pipe saddle
2“ pipe saddle for hot tap installation. Available for pipes from DN80 to DN600.
Pipe saddle is not NSF certified.

Nano-pump
For water flow even during periods of stagnation.

technical specification

measurement interval	1 min (minimal)
precalibrated ex-works	all parameters
integration via	con::line
power supply	via con::line or con::cube
power consumption (typical)	14 W
power consumption (max.)	35 W
wetted materials	POM stainless steel fine brass EN12165 and EN12164 EPDM
dimensions (width x height x depth)	220 x 475 x 340 mm
weight (min.)	approx. 8 kg
operating temperature	0 ... 40 °C
storage humidity	0 ... 95 %
operating pressure	1 ... 10 bar

installation / mounting	on 2“ Hawle pipe saddle (to be ordered separately)
other operating limits	pipeline must be vented installation must be on top of pipe no direct sunlight
pH range	4 ... 12
pH range free chlorine	4 ... 9
automatic cleaning	autobrush (for i::scan)
storage temperature	0 ... 45 °C
conformity - EMC	EN 61326-1
conformity - safety	EN 61010-1 RoHS
drinking water safety certificate	ACS (Attestation de conformité Sanitaire) NSF/ANSI/CAN 61 & 372
protection class (-000)	IP67

i::scan

		parameter								
		turbidity [NTU/ FTU]	color (app) [Hazen]	color (tru) [Hazen]	TOC [mg/l]	DOC [mg/l]	UV254 [Abs/m]	UV254 f [Abs/m]	UVT10 [%]	part number
i::scan FTU/NTU	min.	0								Y01-1-D-000-DW
	max.	800								
i::scan FTU/NTU+Color	min.	0	0	0						Y02-1-D-000-DW
	max.	800	500	500						
i::scan FTU/NTU+UV254	min.	0					0	0	25	Y03-2-D-000-DW
	max.	800					70	70	100	
i::scan FTU/ NTU+UV254+Color	min.	0	0	0			0	0		Y04-2-D-000-DW
	max.	800	500	500			70	70		
i::scan FTU/NTU+TOC_ eq+UV254	min.	0			0	0	0			Y05-3-D-000-DW
	max.	800			25	25	70			
i::scan FTU/NTU+TOC_ eq+UV254+Color	min.	0	0	0	0	0	0			Y06-3-D-000-DW
	max.	800	500	500	25	25	70			

chlori::lyser (stainless steel version)

		parameter			
		free chlorine [mg/l]	total chlorine [mg/l]	temperature [°C]	part number
chlori::lyser (FCl)	min.	0		0	E-520-1-S-000
	max.	2		40	
chlori::lyser (TCl)	min.		0	0	E-525-1-S-000
	max.		2	40	

ph::lyser

		parameter		
		pH [pH]	temperature [°C]	part number
pH::lyser (pH)	min.	4	0	E-514-2-000-DW
	max.	10	40	

condu::lyser

		parameter		
		conductivity [µS/cm]	temperature [°C]	part number
condu::lyser (conductivity)	min.	0	0	E-511-2-000-DW
	max.	500000	40	

redo::lyser

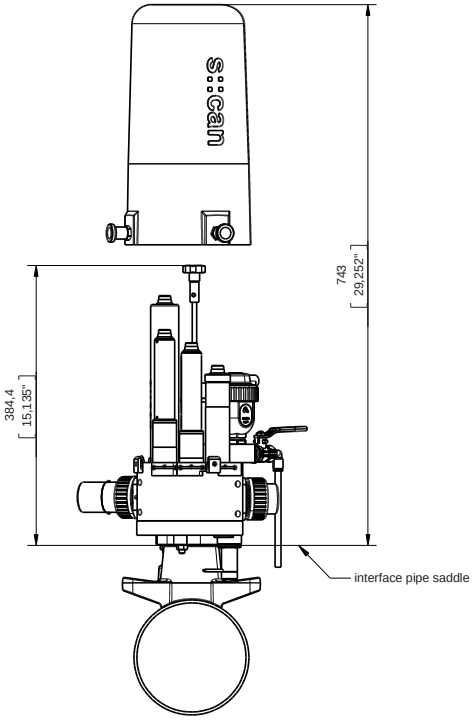
		parameter		
		redox [mV]	temperature [°C]	part number
redo::lyser (redox)	min.	-2000	0	E-513-2-000-DW
	max.	2000	40	

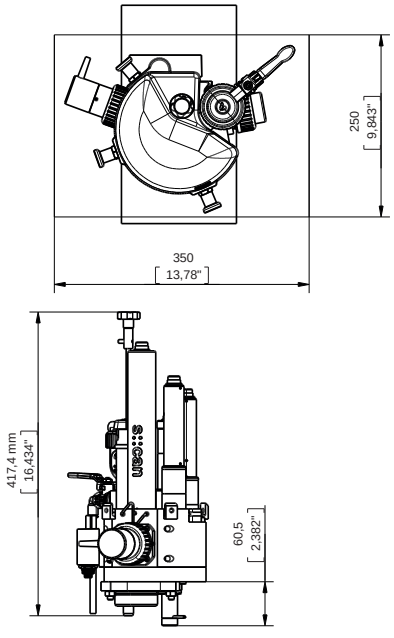
pipe::scan versions

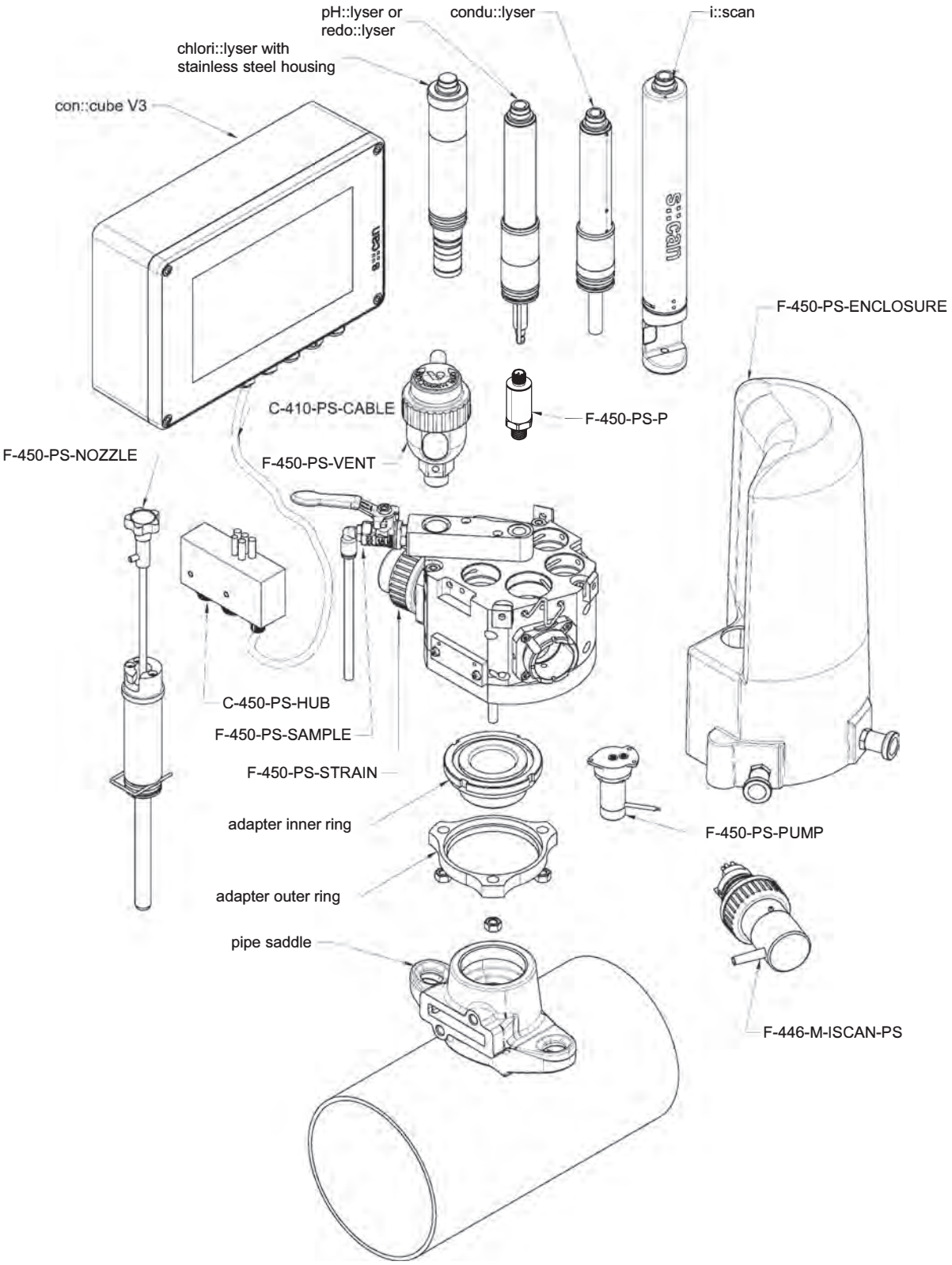
part number	article name
P-450-PS-SET-024-DW	pipe::scan base unit: flow cell incl. adapter plate, nano pump, insertion nozzle, vent valve, enclosure, pipe::scan cable hub incl. 10 m connection cable to con::cube, pressure sensor con::cube V3 24 V incl. D-303-LX, S-08-MONI, S-11-BASIC-PLC, D-315-IN-MA, with drinking water certificate
P-450-PS-SET-230-DW	pipe::scan base unit: flow cell incl. adapter plate, nano pump, insertion nozzle, vent valve, enclosure, pipe::scan cable hub incl. 10 m connection cable to con::cube, pressure sensor con::cube V3 230 V incl. D-303-LX, S-08-MONI, S-11-BASIC-PLC, D-315-IN-MA, with drinking water certificate
P-450-PS-SET-012-DW	pipe::scan base unit: FlowCell incl. adapter plate, nano pump, insertion nozzle, vent valve, enclosure, pipe::scan cable hub incl. 10 m connection cable to con::line, pressure sensor, con::line 12 V incl. S-500-08-IO, with drinking water certificate
Y01-1-D-000-DW	FTU/NTU with i::scan incl. Autobrush for pipe::scan
Y02-1-D-000-DW	FTU/NTU + COLOR with i::scan incl. Autobrush for pipe::scan
Y04-2-D-000-DW	FTU/NTU + COLOR + UV245 with i::scan incl. Autobrush for pipe::scan
Y06-3-D-000-DW	FTU/NTU + COLOR + UV254 + TOC with i::scan incl. Autobrush for pipe::scan
Y03-2-D-000-DW	FTU/NTU + UV254 with i::scan incl. Autobrush for pipe::scan
Y05-3-D-000-DW	FTU/NTU + UV245 + TOC with i::scan incl. Autobrush for pipe::scan
E-520-1-S-000	Free Chlorine sensor, 0-2 mg/l, pressure resistant
E-525-1-S-000	Total Chlorine sensor, 0-2 mg/l, pressure resistant
E-514-2-000-DW	pH sensor, pressure resistant
E-513-2-000-DW	ORP sensor, pressure resistant
E-511-2-000-DW	Conductivity sensor, pressure resistant

recommended accessories

part number	article name
D-500-012	con::line
D-330-xxx	con::cube V3
F-160-SP-SET-DKxxx	Hawle shut off pipe saddle DK75 - DK315, incl. saddle blade (for PE and PVC pipes)
F-160-SP-SET-DNxxx	Hawle shut off pipe saddle DN80 - DK600, incl. saddle blade (for ductile iron pipes)
S-500-08-IO	Io::Tool - s::can monitoring station software for 8 parameters
S-11-xx-moni	moni::tool Software
S-14-vali	vali::tool - s::can data validation software
S-15-ana	ana::tool - s::can event detection software






pH::lyser or
redo::lyser
condu::lyser
i::scan
chlori::lyser with
stainless steel housing
con::cube V3
F-450-PS-ENCLOSURE
C-410-PS-CABLE
F-450-PS-P
F-450-PS-NOZZLE
F-450-PS-VENT
C-450-PS-HUB
F-450-PS-SAMPLE
F-450-PS-STRAIN
adapter inner ring
F-450-PS-PUMP
adapter outer ring
pipe saddle
F-446-M-ISCAN-PS

s::can
A Badger Meter® Brand

Monitoring Stations

Monitoring station

Monitoring station

micro::station

BTX
TOC
DOC
UV254
NO3
NO2
NH4
K+
TCl/FCl
ClO2
H2O2
PAA
F-
TSS
FTU/NTU
Color
pH
ORP
Conductivity
Temperature
O2
O3
H2S
Fingerprints
Alarms

The fully modular micro::station combines s::can instruments to a compact and versatile system. It presents a complete solution, as the user only has to connect water supply and -discharge ("plug & measure") in order to receive a previously unheard variety of immediately available information and parameters at no extra cost.

The s::can micro::station is designed for OnLine monitoring of water quality parameters in clean media, such as drinking water. The required components - spectro::lyser, s::can probes and controller - are factory assembled with all required flow cells, mounting fittings and pipework on a compact panel.

micro::station - the s::can solution for water analysis - compact and easy like never before.

1 Terminal

con::cube terminal with moni::tool software for data acquisition, data display and station control

2 Spectrometer probe

All s::can spectrometer probes are multi-parameter instruments that can measure a variety of water quality parameters

Possible parameters:
BOD, BTX, COD, color, DOC, FTU/NTU, H_2S, NO_2-N, NO_3-N, O_3, TOC, TSS, UV254, Fingerprints and Spectral Alarms, Temperature and Pressure

3 Flow cell for spectrometer probe

Including auto brush cleaning device to provide cleaning of the optical measuring windows

4 Flow detector

The flow detector is set to give an alarm if the flow rate decreases below a critical value

5 Pressure transmitter (optional)

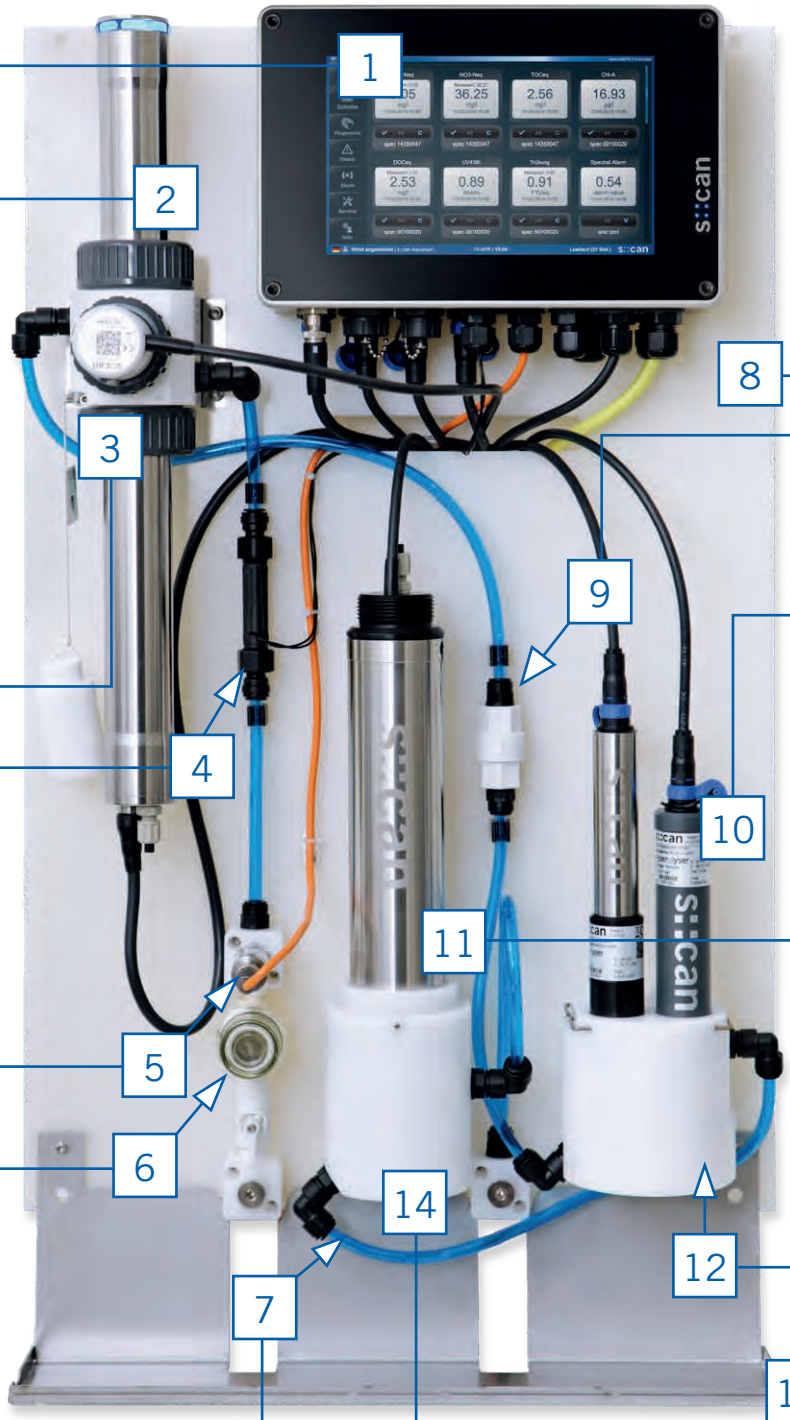
Mounting position for pressure transmitter

6 Inlet strainer

The inlet strainer ascertains that no coarse material enters the micro::station. With screw cap for sieve removal/cleaning

7 System tubing

Included in panel assembly; Material PU, inside diameter 6 mm, outside diameter 8 mm



8 Main panel

Material: PP
Weight of the station (fully equipped): 20 kg (+/- 1 kg)

9 Flow restrictor unit

For automatic flow restriction and back-flow prevention in by-pass

10 Physical probes

Up to four s::can physical probes can be installed in one flow cell

Possible parameters:
Conductivity, FCl/TCL, ClO2, H2O2, PAA, pH, PSU, Redox and Temperature

11 Physical probe or ISE probe

Place for oxi::lyser, soli::lyser or s::can ISE probe (e.g. ammo::lyser)

Possible parameters:
F-, K+, NH_4-N, NO_3-N, O_2, pH and Temperature

12 Flow cell for physical probes

Combined flow cell for up to four s::can physical probes. Provides quick connect/ disconnect design by safety pins to reduce offline time during sensor maintenance

13 Service tray

For easier sensor handling during maintenance

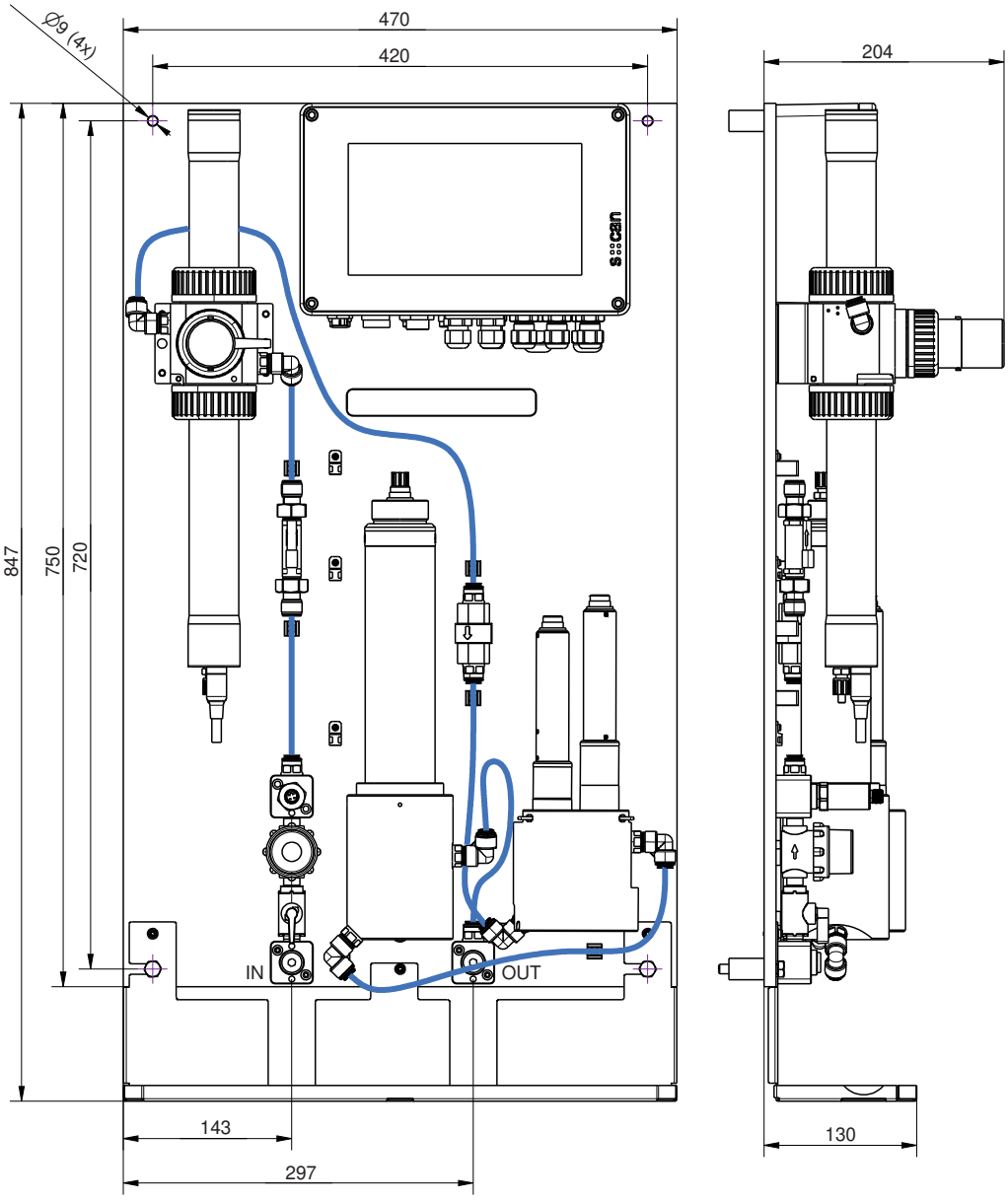
14 Flow cell for ISE probe

Flow cell for one s::can ISE probe

micro::station

Options for s::can micro::station

1 Terminal	con::cube V3 con::lyte
2 Spectrometer probe	spectro::lyser V3 carbo::lyser V3 multi::lyser V3 nitro::lyser V3 ozo::lyser V3 uv::lyser V3
3 Flow cell for spectrometer probe	flow-cell (by-pass fitting), POM-C (for pathlengths from 1 mm to 35 mm) flow-cell (by-pass fitting), POM-C (for pathlength 100 mm) flow-cell (by-pass fitting) autobrush, POM-C (for pathlength 35 mm) flow-cell (by-pass fitting) autobrush, POM-C (for pathlength 100 mm)
4 Flow detector	flow detector
5 Pressure transmitter	pressure transmitter for micro::station (optional)
6 Inlet strainer	inlet strainer
7 System tubing	inside diameter 6 mm, outside diameter 8 mm
8 Main panel	system panel micro::station US system panel micro::station EU system panel micro::station add-on module EU system panel micro::station add-on module US
9 Flow restrictor unit	automatic flow restrictor unit flow adjustment valve
10 Physical probes	pH::lyser redo::lyser condu::lyser chlori::lyser chlodi::lyser hyper::lyser peroxi::lyser
11 Physical probe or ISE probe	ammo::lyser eco ammo::lyser pro fluor::lyser oxi::lyser soli::lyser
12 Flow cell for physical probes	flow-cell for up to 4 s::can physical probes, POM-C s::can physical probe flow-cell (by-pass setup), POM-C
13 Service tray	service tray
14 Flow cell for ISE probe or physical probe	ammo::lyser flow-cell (by-pass setup), POM-C oxi::lyser flow-cell



nano::station

TOC
SAC
UV254
Color
TCI
FCI
FTU/NTU
Transmission
ClO2
H2O2
PAA
Conductivity
pH
ORP
Temperature
Alarms

The fully modular nano::station combines s::can instruments to a super-compact and versatile system. It presents a complete solution, as the user only has to connect water supply and -discharge ("plug & measure") in order to receive at no extra cost a previously unheard variety of immediately available information and parameters.

The s::can nano::stationwill revolutionize OnLine water quality monitoring: From very cost sensitive applications down to highly resolved "Smart Water Grids", in small unmanned plants, or even in single building protection.
The required components - i::scan, s::can probes and s::can controller - are factory assembled with required flow cells, mounting fittings and pipework on a super-compact panel.

The s::can nano::station - compact, precise and affordable!

nano::station with con::lyte

1 Terminal
With con::cube or con::lyte terminal. con::cube is equipped with moni::tool software for data acquisition, data display and station control

2 Flow detector (optional)

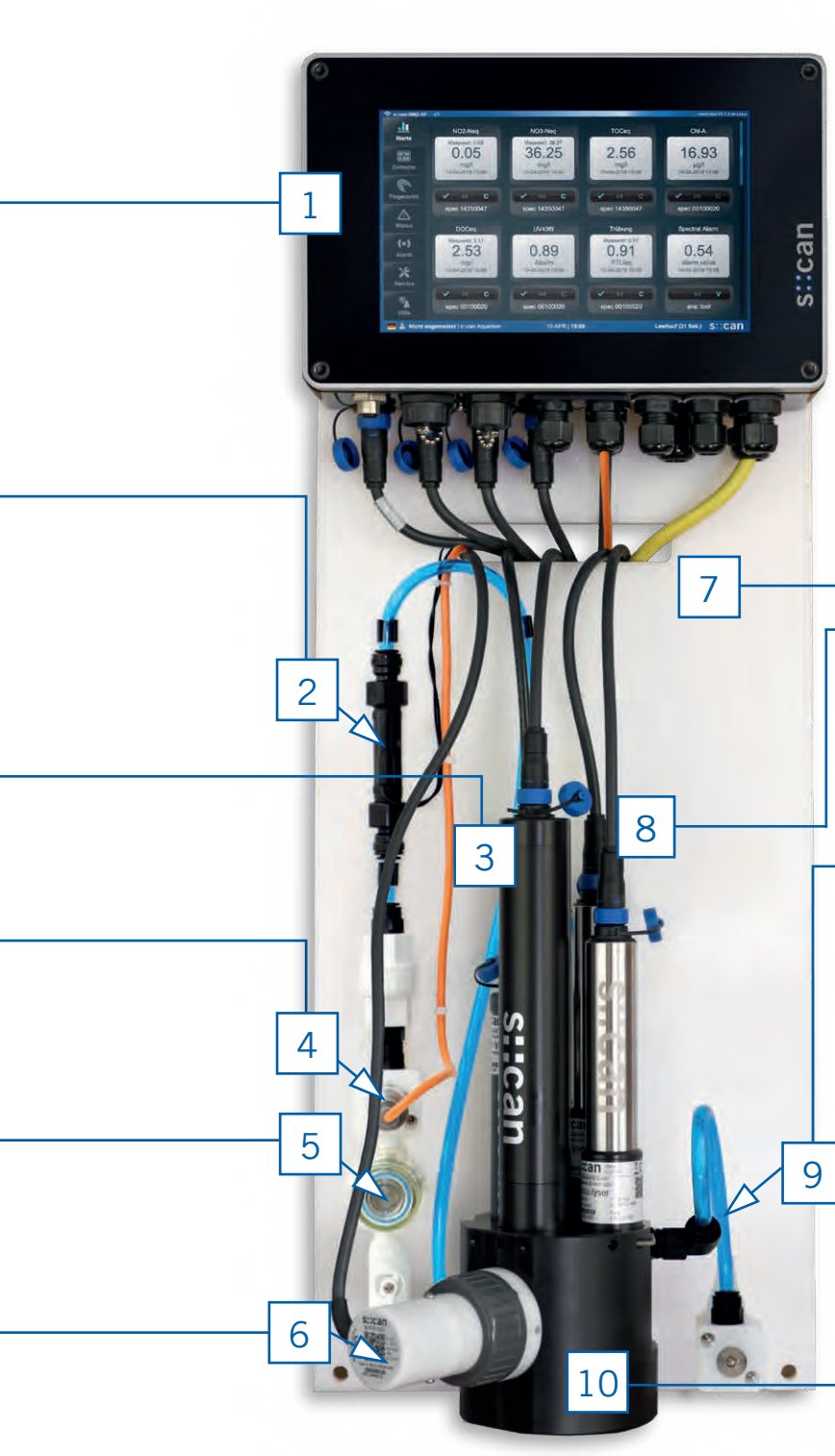
3 i::scan
One i::scan can be installed on every nano::station

Possible parameters:
Color, FTU/NTU, UV254, TOC, DOC, Transmission

4 Pressure sensor (optional)
Mounting position for pressure transmitter

5 Inlet strainer
The inlet strainer ascertains that no coarse material enters the nano::station. With screw cap for sieve removal/ cleaning

6 Autobrush for i::scan
Provides automatic cleaning for i::scan



7 Main panel

Material: PE
Weight of the station (fully equipped): 11 kg (+/- 1 kg)

8 Physical probes

Up to three s::can physical probes can be installed additionally to the i::scan in one flow cell (e.g. condu::lyser, pH::lyser or chlori::lyser)

Possible parameters:
Conductivity, FCl, TCL, ClO2, H2O2, PAA, pH, Redox and Temperature

9 System tubing

Included in panel assembly; Material PU, inside diameter 6 mm, outside diameter 8 mm

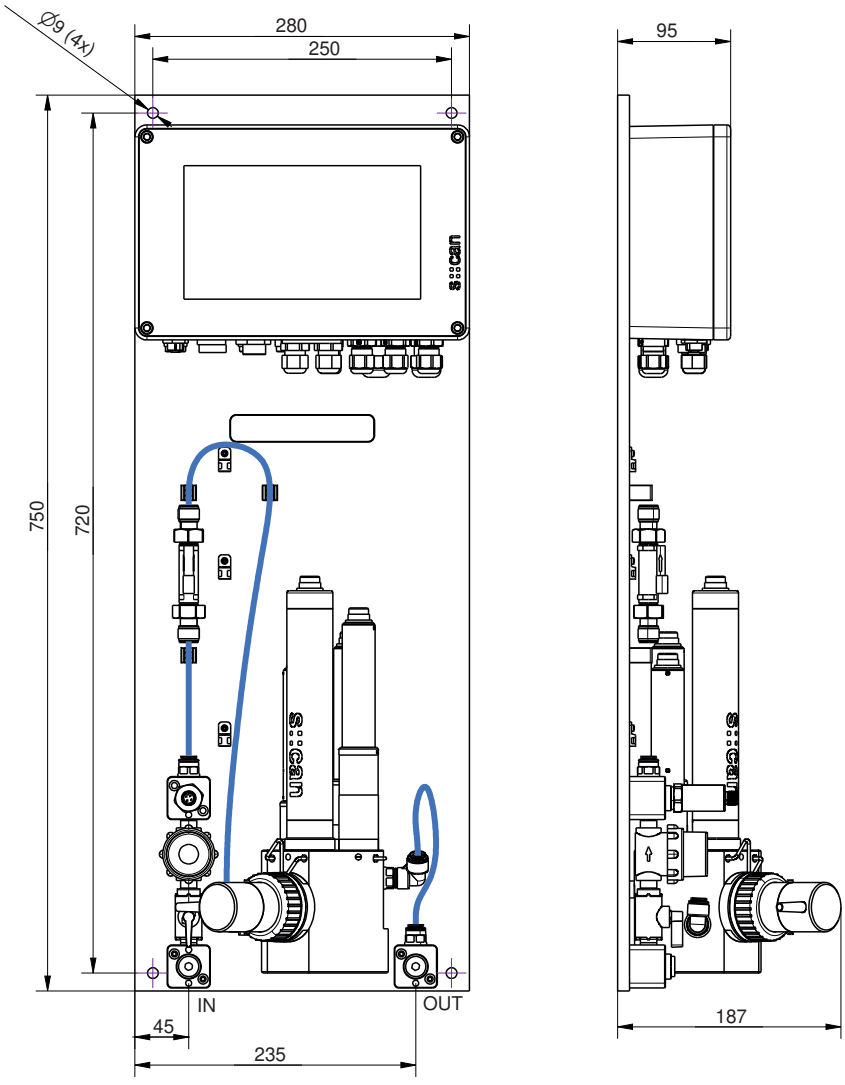
10 Flow cell for i::scan and physical probes

Combined flow cell for one i::scan and up to three s::can physical probes. Provides quick connect/disconnect design by safety pins to reduce offline time during maintenance.
A flow restrictor (optional) can be installed in the flow cell.

nano::station

Options for s::can nano::station

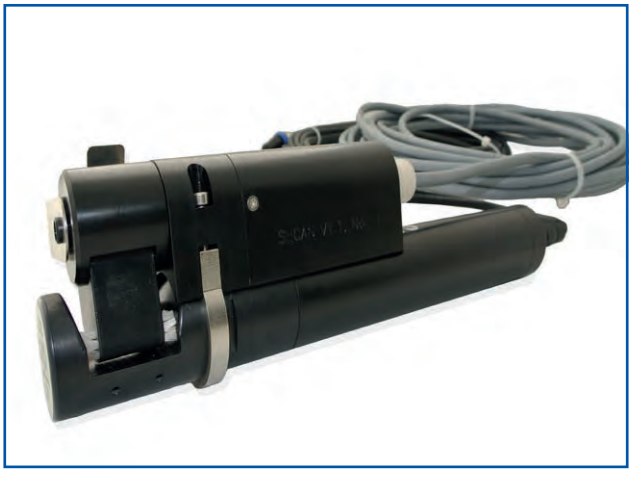
1 Terminal	con::cube V3, con::lyte
2 Flow detector	flow detector (optional)
3 i::scan	i::scan
4 Pressure transmitter	pressure transmitter for nano::station (optional)
5 Inlet strainer	inlet strainer
6 Autobrush	autobrush for i::scan
7 Main panel	system panel nano::station US or system panel nano::station EU
8 Physical probes	pH::lyser redo::lyser condu::lyser chlori::lyser chlodi::lyser hyper::lyser peroxi::lyser
9 System tubing	inside diameter 6 mm, outside diameter 8 mm
10 Flow cell for physical probes and i::scan	flow-cell for i::scan and up to 3 s::can physical probes, POM-C



s::can
A Badger Meter® Brand

Spare Parts & Accessories

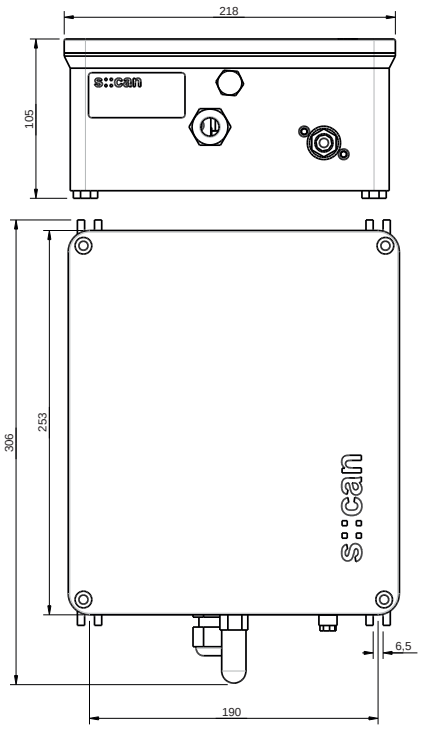
Reference electrode and ammonium electrode for ammo::lyser



ruck::sack - brush for submersed installation

s::can compressor

- provides compressed air for s::can spectrometer probes, oxi::lyser, soli::lyser and ammo::lyser™
- removal of fouling using compressed air
- aluminium housing IP65 for wall mounting
- optional 12 VDC or 230/110 VAC version available
- railing-mounting set available



technical specification	
power supply	type B32-230: 230 VAC type B32-110: 110 VAC type B32-012: 12 VDC
power consumption (typical)	AC 100 W DC 60 W (5.2A @ 12V)
power consumption (max.)	AC 100 W DC 180 W (15A @ 12V)
assembling	ex works
housing material	aluminium
dimensions (width x height x depth)	218 x 253 x 105 mm
weight (min.)	4.9 kg
process connection	1/4"
installation / mounting	Mounting bracket d6 / 0.25 dia
operating temperature	-10 ... 40 °C
operating pressure	0 ... 6 bar
ingress protection class	IP65
tank volume	0.4 l
charging time	typ. 25 sec
sound emission	60dB(A)
maintenance interval	1500 operating hours
storage temperature	-10 ... 60 °C
storage humidity	0 ... 95 %
conformity - EMC	EN 61326-1:2006
conformity - safety	EN 61010-1:2001
part number	B-32-230 B-32-110 B-32-012

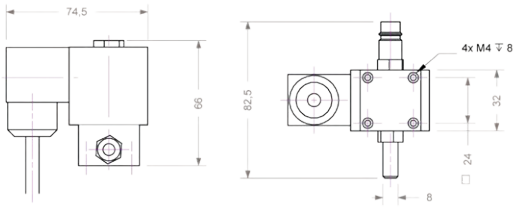
to be used for
ammo::lyser™ pro
ammo::lyser™ eco
oxi::lyser™
carbo::lyser™ II / III - V3
multi::lyser™ IV - V3
nitro::lyser™ II - V3
ozo::lyser II - V3
uv::lyser V - V3

recommended accessories	
part number	**article name**
B-44 B-44-2	cleaning valve
C-31-eu	Optional 2 m power cable
C-31-us	Optional 2 m power cable

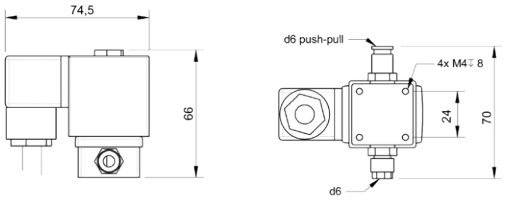
cleaning valve

- supports automatic cleaning of measuring elements of von s::can spectrometer probes, oxi::lyser, soli::lyser and ammo::lyser™
- removal of fouling, sediments and clogging using compressed air or -water
- version B-44-2 specially for use in comination with the s::can compressor

technical specification	
cable length	2.4 m (B-44) 1 m (B-44-2)
assembling	ex works
dimensions (width x height x depth)	85 x 75 x 70 mm
weight (min.)	500 g
process connection	B-44: pressure side DIN 7.2 coupling, at sensor direction ID 3/8" B-44-2: pressure side quick coupling d6x4, at sensor direction push-pull d6x4
ingress protection class	IP65
part number	B-44 B-44-2



B-44



B-44-2

to be used for
ammo::lyser™ pro
oxi::lyser™
carbo::lyser™ II / III - V3
multi::lyser™ IV - V3
nitro::lyser™ II - V3
ozo::lyser II - V3
uv::lyser V - V3

recommended accessories	
part number	**article name**
B-41	s::can pressure connection set for V2 spectro::lyser and s::can sensors

ruck::sack

- submersible Autobrush for spectrometer probes and i::scan
- exchangeable brushes for spectrometer probe with path length 35, 15, 5 mm and i::scan 35 and 5 mm
- one basis module (motor unit) for all versions
- shelter protects the brush from clogging

technical specification	
power supply	12 VDC
power consumption (typical)	150 mA (average)
power consumption (max.)	300 mA
cable length	8 m
housing material	POM-C
dimensions (width x height x depth)	182 x 46 x 36.5 mm
weight (min.)	750 g (incl. cable)
installation / mounting	submersed
operating pressure	0 ... 0.5 bar
ingress protection class	IP68
storage temperature	-20 ... 80 °C
storage humidity	0 ... 95 %
part number	F-146-rs-35, F-146-rs-15, F-146-rs-05, F-146-rs-iscan-35, F-146-rs-iscan-05

to be used for
Spectrometer Probes
i::scan

recommended accessories	
part number	**article name**
F-146-brush-35	brush for ruck::sack 35 mm (spare part)
F-146-brush-15	brush for ruck::sack 15 mm (spare part)
F-146-brush-05	brush for ruck::sack 5 mm (spare part)

pressure mounting for i::scan in-pipe installation (i::scan removal under pressure)

- for proper and easy installation of one i::scan in a pressure pipe
- under pressure drilling of pipes possible (for PE, PVC, DCI, steel and AC pipes)
- the i::scan can be mounted and demounted under pressure without interruption of the water flow

technical specification	
housing material	stainless steel
dimensions (height)	550 mm (max.)
weight (min.)	5 kg
process connection	for DCI, steel and AC pipes: DN80 ... DN600 (others on request) for PE- and PVC-pipes: pipe outside diameter 75 ... 315 mm
operating pressure	0 ... 12 bar
part number	F-160-iscan

to be used for
i::scan

recommended accessories	
part number	**article name**
F-160-SP-SET-DKxxx	Hawle shut off pipe saddle DK75 - DK315, incl. saddle blade (for PE and PVC pipes)
F-160-SP-SET-DNxxx	Hawle shut off pipe saddle DN80 - DK600, incl. saddle blade (for ductile iron pipes)

flow cell autobrush - for spectro::lyser V3 & V2 pathlength 35 mm

- for proper and easy flow-through installation of s::can spectrometer probes
- for applications with frequent, automatic cleaning
- cleaning of optical windows with rotating brush without demounting of spectrometer probe

technical specification	
power supply	12 VDC
assembling	ex works
housing material	POM-C
dimensions (width x height x depth)	74 x 132 x 153 mm
weight (min.)	1 kg
process connection	G 1/4"
installation / mounting	flow cell
operating temperature	0 ... 40 °C
operating pressure	0 ... 6 bar
ingress protection class	IP66
part number	F-446-1

to be used for
Spectrometer Probes

recommended accessories	
part number	**article name**
F-501-eco-us	System Panel micro::station US
F-501-eco-eu	System Panel micro::station EU
F-45-process	process connection 1/4" G

flow cell for four s::can physical probes

- for proper and easy flow-through installation of condu::lyser, chlori::lyser, redo::lyser and pH::lyser
- for applications without automatic cleaning in drinking water

technical specification	
housing material	POM-C
dimensions (Ø x l)	106 x 103
weight (min.)	1.05 kg
process connection	G 1/4", hose nozzle 7mm
installation / mounting	flow cell
operating temperature	0 ... 50 °C
operating pressure	0 ... 6 bar
part number	F-45-four

to be used for
condu::lyser
redo::lyser
pH::lyser
chlori::lyser (analog)

recommended accessories	
part number	**article name**
F-501-eco-us	System Panel micro::station US
F-501-eco-eu	System Panel micro::station EU
F-45-process	process connection 1/4" G
F-45-flow-1	Automatic flow control unit
F-45-strain	Inlet strainer

i::scan flow cell for up to 3 additional s::can probes

- for proper and easy flow-through installation of one i::scan and up to three s::scan physical probes
- automatic cleaning with autobrush for i::scan available (optional)

technical specification	
housing material	POM-C
dimensions (Ø x l)	106 x 103
weight (min.)	1 kg (without autobrush)
process connection	G 1/4", hose nozzle 7mm
installation / mounting	flow cell
operating temperature	0 ... 50 °C
operating pressure	0 ... 6 bar
part number	F-46-four-iscan

to be used for
condu::lyser
redo::lyser
pH::lyser
chlori::lyser (analog)
i::scan

recommended accessories	
part number	**article name**
F-501-eco-us	System Panel micro::station US
F-501-eco-eu	System Panel micro::station EU
F-45-process	process connection 1/4" G
F-45-strain	Inlet strainer

s::can flow-cell (by-pass setup), PVC (wastewater)

- side-by-side stackable flow cells for waste water applications (add-on dimension 177 mm)
- cleaning with pressurized air possible

technical specification	
housing material	PVC
dimensions (width x height x depth)	ammo::lyser: 117 x 83 x 108 mm i::scan: 177 x 83 x 90 mm oxi::lyser: 177 x 117 x 141 mm physical probe: 177 x 95 x 111 mm spectrometer probe: 177 x 98 x 126 mm
process connection	G 1" inner thread
recomended flow	< 40 l/min
part number	F-48-ammo F-48-iscan F-48-oxi F-48-sensor F-48-spectro

recommended accessories	
part number	**article name**
F-48-process	process connection 1", PVC

auto::blade

- Mechanical Cleaning for spectrometer probes with path length 5 mm
- Mounting on F-48-V3 wastewater flow cell
- Exchangeable wiper blades
- Set of cleaning and valve unit

technical specification	
power supply	12 VDC
power consumption (typical)	200 mA
cable length	1.5 m
tube length	1.5 m
housing material	stainless steel POM-C
dimensions (width x height x depth)	cleaning unit: 89 x 40 x 193 mm valve unit: 66 x 143 x 86 mm
weight (min.)	cleaning unit: 320 g valve unit: 340 g
operating temperature	0 ... 45 °C
operating pressure	1 ... 8 bar
ingress protection class	IP65
storage temperature	-20 ... 80 °C
storage humidity	0 ... 95 %
part number	F-550-05

to be used for
Spectrometer Probes

recommended accessories	
part number	**article name**
F-550-BLADE-05	Cleaning Blades 5 mm, spare part for auto::blade, set of 2
F-48-V3	spectrometer V3 & V2 flow-cell (bypass setup), PVC
B-32-230 B-32-110 B-32-012	s::can compressor

Spectrometer infrastructure	
part number	**article name**
A-001-s	Inserts for optical pathlength 1 mm, stainless steel
A-002-s	Inserts for optical pathlength 2 mm, stainless steel
A-005-s	Inserts for optical pathlength 5 mm, stainless steel
A-015-s	Inserts for optical pathlength 15 mm, stainless steel
A-500-s	Inserts for optical pathlength 0.5 mm, stainless steel
A-005-q	Inserts for optical pathlength 5 mm, stainless steel, special quarz windows
A-015-q	Inserts for optical pathlength 15 mm, stainless steel, special quarz windows
A-035-s	Cleaning insert for optical pathlength 35 mm, stainless steel
E-421-2	Multifunctional slide for pathlength 100 mm
E-431-1-iscan	multifunctional slide i::scan 35 mm
E-431-2-iscan	multifunctional slide i::scan 5 mm
E-421-V3	Multifunctional slide (for spectrometer V3 & V2 pathlength 0,5 mm to 35 mm)
V3-logger	License fee for integrated data logger in spectro::lyser V3 or G::series V3

Sensors infrastructure	
part number	**article name**
E-509-1/2-EL	Hydrogen Peroxide electrolyte (spare part)
E-509-1/2-SET	Hydrogen Peroxide membrane cap (spare part)
E-510-guard	Electrode protection shelter (spare part)
E-513-ORP	ORP & reference electrode for redo::lyser (spare part)
E-514-pH	pH & reference electrode for pH::lyser (spare part)
E-515-1/2-EL	Peracetic Acid electrolyte (spare part)
E-515-1/2-SET	Peracetic Acid membrane cap (spare part)
E-520-1/2-KIT	Free Chlorine electrolyte and membrane cap (spare parts)
E-525-1/2-KIT	Total Chlorine electrolyte and membrane cap (spare parts)
E-528-1/2-KIT	Chlorine Dioxide electrolyte and membrane cap (spare parts)
E-532-ise-K	potassium electrode for ammo::lyser™ (spare part, new)
E-534-ise-NH4	Ammonium electrode for ammo::lyser™ (spare part, new)
E-532-ise-NO3	Nitrate electrode for ammo::lyser V1 (spare part, new)
E-532-ise-pH	pH electrode for ammo::lyser V1 (spare part, new)
E-532-ise-ref	reference electrode for ammo::lyser V1 (spare part, new)
E-532-tool	Tool for s::can ISE probes (spare part)
E-533-ise-Cl	Chloride electrode for ammo::lyser V2 (spare part, new)
E-533-ise-K	Potassium electrode for ammo::lyser V2 (spare part, new)
E-535-ise-NH4	Ammonium electrode for ammo::lyser V2 (spare part, new)
E-533-ise-NO3	Nitrate electrode for ammo::lyser V2 (spare part, new)
E-533-ise-pH	pH electrode for ammo::lyser V2 (spare part, new)
E-533-ise-ref	Reference electrode for ammo::lyser V2 (spare part, new)
E-542-ise-F	Fluoride electrode for fluor::lyser V1 (spare part, new)
E-543-ise-F	Fluoride electrode for fluor::lyser V2 (spare part, new)
E-632-ise	Refurbishment of ionselective electrodes for s::can ISE probes
E-632-ise-K	Refurbished Potassium electrode for ammo::lyser V1 (spare part, refurbished)
E-634-ise-NH4	Refurbished Ammonium electrode for ammo::lyser V1 (spare part, refurbished)
E-632-ise-NO3	Refurbished Nitrate electrode for ammo::lyser V1 (spare part, refurbished)
E-633-ise-K	Refurbished Potassium electrode for ammo::lyser V2 (spare part, refurbished)
E-635-ise-NH4	Refurbished Ammonium electrode for ammo::lyser V2 (spare part, refurbished)
E-633-ise-NO3	Refurbished Nitrate electrode for ammo::lyser V2 (spare part, refurbished)

Cleaning & Pressure Devices	
part number	**article name**
B-44 B-44-2	Cleaning valve
B-32-230 B-32-110 B-32-012	s::can compressor
B-32-m-012	Motor unit for compressor (12 VDC)
B-32-m-110	Motor unit for compressor (110 VAC)
B-32-m-230	Motor unit for compressor
B-32-service	Service kit for s::can compressed air supply
B-41	s::can pressure connection set for V2 spectro::lyser and s::can sensors
B-43-2	10 x desiccant
B-45-V2	PVC clips (spare part for V2 spectro::lyser), set of 2
B-60-1	Cleaning brush for pathlength < 15 mm
B-60-2	Cleaning brush for pathlength < 2 mm
B-61-1	Cleaning agent

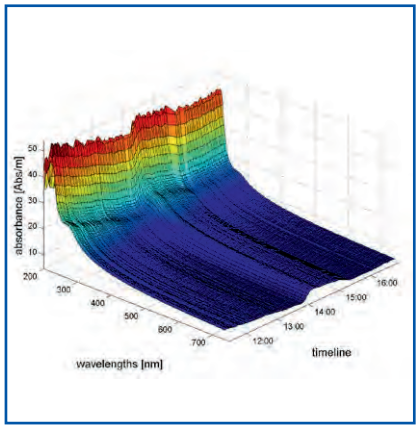
Cables & Power Supply	
part number	**article name**
C-1-010-sensor	1 m connection cable for s::can physical and ISE probes
C-210-sensor	10 m extension cable for s::can physical probes and s::can ISE probes
C-210-spectro	10 m extension cable for s::can™ spectrometer probes
C-220-sensor	20 m extension cable for s::can physical probes and s::can ISE probes
C-220-spectro	20 m extension cable for s::can™ spectrometer probes
C-230-sensor	30 m extension cable for s::can physical probes and s::can ISE probes
C-230-spectro	30 m extension cable for s::can™ spectrometer probes
C-31-eu	Optional 2 m power cable
C-31-us	Optional 2 m power cable
C-41-hub	Distribution box for additional sensors such as i::scan, sensors & ISE probes (3 x IP67 sys plug connections, RS485, 12 VDC) incl. C-1-010-sensor
C-210-V3	10 m extension cable for s::can spectrometer probe V3 (M12-plug, Ethernet, 12 VDC)
C-220-V3	20 m extension cable for s::can spectrometer probe V3 (M12-plug, Ethernet, 12 VDC)
C-32-MIL	Adapter cable to connect a V2 spectrometer (MIL) to V3 Terminal (M12)
C-32-V3	Adapter cable to connect a V3 spectrometer (M12) to V2 Terminal (MIL Plug)
C-500-ETHERNET	network adapter cable 30 cm
C-500-POWER-030	power cable (con::line), 2 pin Buccaneer (loose ends), 3 m cable
C-500-UPLINK-075	M12 modbus/ethernet to SCADA for con::line (loose ends) 7.5 m cable
C-500-UPLINK-010	M12 modbus/ethernet to SCADA for con::line (loose ends) 1 m cable
C-500-CLEANING	adapter for autobrush/ruck::sack/B44 claning valve for con::line, IP68
C-500-PIPESCAN-CABLE	12 pin Buccaneer to pipe::scan hub, 10 m cable
C-500-IO-BOX	adapter box 12 pin Buccaneer to terminal clamps, 0.5 m cable IP67, 2 cable glands

Operation, Visualisation and Additional Interfaces	
part number	**article name**
D-303-LX	Linux Application Licence (obligatory to D-330)
D-315-3GLX	Worldwide 3D internet connection via Quad-band HSPA (up to 5.7 Mbps/21 Mbps)
D-330-ANTENNA-PLUG	Internal antenna adapter cable and connector, option for con::cube
D-330-antenna-pro	External, high range antenna option for con::cube, incl. 3 m extension cable
D-315-in-mA	2 analogue inputs (input module), provides 2 analogue inputs (4-20mA) for integration of 3rd party readings
D-315-in-relay	2 digital inputs (input module), provides 2 digital IN (5-24V) for integration of 3rd party readings
D-315-out-mA	2 analogue outputs (output module), provides data transfer to PLC systems
D-315-out-profibus	provides Profibus DPV0 for data transfer to PLC systems
D-315-out-relay	4 digital outputs (output module), provides 4 configurable relay contacts 1A
D-315-out-SDI12	SDI 12 (output module), provides SDI 12 for data transfer to PLC systems
D-319-logger	Datalogger option for con::lyte
D-319-out-mA	2 x 4 - 20 mA (output module for con::lyte)
D-319-out-profibus	Profibus (output module for con::lyte)
D-320-out-mA	License for 3 analog outputs (4-20 mA) for con::lyte pro
D-320-OUT-MODBUS	Modbus (software license for con::lyte D-320)
D-320-PID	3 x PID control output for con::lyte D-320
D-500-DIN-ADAPTER	DIN Rail mounting set (for con::line)
D-330-ANTENNA-CABLE	10 m antenna extension cable
D-330-4GLX	Worldwide 4G internet connection via 7-band HSPA+ (21 Mbps/5.7 Mbps)

Installation	
part number	**article name**
F-51	weather shield for s::can terminals
F-110-iscan	carrier i::scan, for easy horizontal attachment
F-110-V3	carrier s::can spectrometer V3 & V2 probe, 45°
F-110-V3	Carrier s::can spectrometer V3 & V2 probe, for easy 45 degree attachment
F-120-V3	Carrier s::can spectrometer V3 & V2 probe, for easy vertical attachment
F-11-oxi-ammo	carrier oxi::lyser / soli::lyser / s::can ISE probes
F-120-iscan	carrier i::scan, for easy vertical attachment
F-120-V3	carrier s::can spectrometer V3 & V2 probe, vertical attachment
F-12-sensor	carrier s::can physical probes
F-130-iscan	carrier i::scan, for easy 45° attachment
F-140-iscan	simple mounting for i::scan in-pipe installation
F-140-V3	Carrier s::can spectrometer V3 & V2 probe, for easy 45 degree attachment (new design)
F-146-brush-05	brush for ruck::sack 5 mm (spare part)
F-146-brush-15	brush for ruck::sack 15 mm (spare part)
F-146-brush-35	brush for ruck::sack 35 mm (spare part)
F-146-brush-iscan-35	brush for ruck::sack 35 mm i::scan (spare part)
F-146-brush-iscan-05	brush for ruck::sack 5 mm i::scan (spare part)
F-146-retro-05	ruck::sack retrofitting set to 5 mm OPL
F-146-retro-15	ruck::sack retrofitting set to 15 mm OPL
F-146-retro-35	ruck::sack retrofitting set to 35 mm OPL
F-15	fixing adapter - stainless steel
F-150-V3	Carrier s::can spectrometer V3 & V2 probe, for easy vertical attachment (new design)
F-160-iscan	In-pipe Hawle i::scan fixture (ideal for -000 i::scan version), i::scan removal under pressure, for DN 80-600 pipes, pipe saddle must be ordered separately!
F-445-2	flow cell - for pathlength 100 mm
F-446-V3	flow cell AutoBrush, POM-C (for spectrometer V3 & V2 pathlength 35 mm)
F-446-2	flow cell autobrush - for spectro::lyser™ pathlength 100 mm
F-446-brush	brush for flow-cell AutoBrush (spare part)
F-446-brush-iscan	brush for flow-cell AutoBrush i::scan (spare part)
F-446-m	brush unit for flow-cell AutoBrush (spare part)
F-446-m-iscan-dw	brush unit for flow-cell Auto-Brush i::scan
F-45-alarm	Flow detector unit
F-45-ammo	flow cell for ammo::lyser™
F-45-flow-1	Automatic flow control unit
F-45-FLOW-1-MICRO	Automatic flow restrictor unit for micro::station (push/pull)
F-45-FLOW-1-NANO	Automatic flow restrictor unit for nano::station (push/pull)
F-45-four	flow cell for four s::can physical probes
F-45-oxi	flow cell for oxi::lyser™ and soli::lyser
F-45-sensor	flow cell for s::can sensor
F-45-strain	Inlet strainer
F-45-valve	Flow adjustment valve
F-46-four-iscan	i::scan flow cell for up to 3 additional s::can probes
F-46-iscan	i::scan flow-cell (by-pass setup), Pom-C, without cleaning
F-46-PROCESS	Process connection 1/4" G, set of 4
F-48-ammo	ammo::lyser flow-cell (by-pass setup), PVC
F-48-iscan	flow cell for i::scan (waste water), PVC
F-48-oxi	oxi::lyser or soli::lyser flow-cell (by-pass setup), PVC
F-48-process	process connection 1", PVC
F-48-sensor	s::can Sensor flow-cell (by-pass setup), PVC
F-48-V3	spectrometer V3 & V2 flow-cell (bypass setup), PVC
F-500-HOSE	Adapter kit for F-45-FLOW-1/F-45-ALARM (push/pull)
F-500-p	Pressure Sensor for micro::station
F-500-pump	Drinking water pump for micro::station
F-500-service-set	Service set for micro::station
F-501-eco-eu	System Panel micro::station EU
F-501-eco-us	System Panel micro::station US
F-502-eco-eu	System Panel micro::station add-on module EU
F-502-eco-us	System Panel micro::station add-on module US
F-506-panel-eu	System panel nano::station EU
F-506-panel-us	System panel nano::station US
F-508-panel	System panel waste water micro::station
F-160-SPSET-DKxxx	Hawle shut off pipe saddle DK75 - DK315, incl. saddle blade (for PE and PVC pipes)
F-160-SPSET-DNxxx	Hawle shut off pipe saddle DN80 - DK600, incl. saddle blade (for ductile iron pipes)
F-445-V3	Flow-cell (by-pass fitting), Pom-C (for spectrometer V3 & V2 pathlengths from 1 mm to 35 mm)
F-446-V3-ti	Flow-cell (by-pass fitting) AutoBrush, Pom-C (for spectrometer V3 & V2 pathlength 35 mm) titanium version
F-446-2	flow cell autobrush - for spectro::lyser™ pathlength 100 mm
F-550-BLADE-05	Cleaning Blades 5 mm, spare part for auto::blade, set of 2
F-450-PS-BASE	pipe::scan base unit: FlowCell incl. adapter plate, nano pump, insertion nozzle, vent valve and enclosure
C-450-PS-HUB	cable hub for pipe::scan: 4 x sensor cables, 1 x cable for pressure sensor, socket for AutoBrush, socket for cable to con::cube

s::can
A Badger Meter® Brand

Services & Solutions



parameter X1

- individual local calibration by s::can Support
- based on chemometric methods (PCA/PLS), incl. statement of statistical quality
- s::can feasibility study A-xf and validated laboratory results are precondition
- individual quotation from s::can Sales & individual clarification by s::can Support precondition

technical specification	
part number	A-x1

feasibilty study

- individual, substance specific spectral analysis by s::can Support
- prediction of substance-specific range & precision in distilled water
- considering possible background of solids
- recommendation of optical pathlength & possible standard applications, incl. scientific report
- no on-site sampling necessary
- background of solids required
- precondition for contamispec validation & parameter X

technical specification	
part number	A-xf

1 hour consulting, data handling

- 1 hour consulting, data handling

technical specification	
part number	I-C

start up deployment of one s::can monitoring system on site

- start up deployment of one s::can monitoring system on site

technical specification	
part number	I-I

1 hour service

- 1 hour service

technical specification	
part number	I-S

1 hour engineer, service on site

· 1 hour engineer, service on site

technical specification	
part number	I-T

3 years service i::scan

· 3-year check and service of i::scan incl. 3-year guarantee extension

technical specification	
part number	X-03-iscan

3 years service spectro::lyser

· 3-year check and service of spectro::lyser incl. 3-year guarantee extension

technical specification	
part number	X-03-spectro

assembly of s::can systems

· mounting of flow-cells on system panel
· mounting of terminals and additional components on system panel / weather shield
· wiring of autobrush / cleaning valve / pressure sensor / flow detector
· obligatory for s::can micro::station

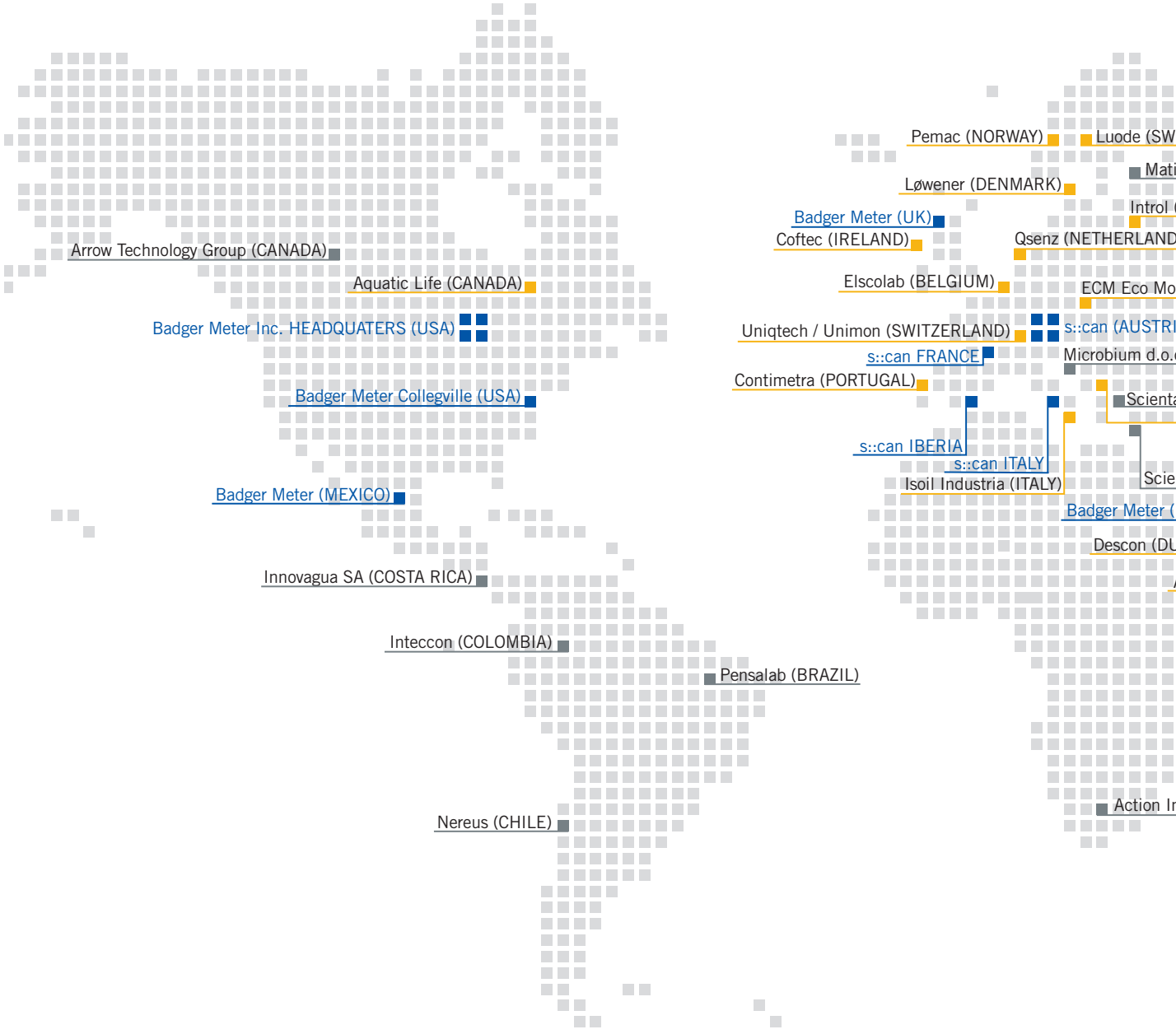
technical specification	
part number	X-sys-assy

configuration of s::can systems

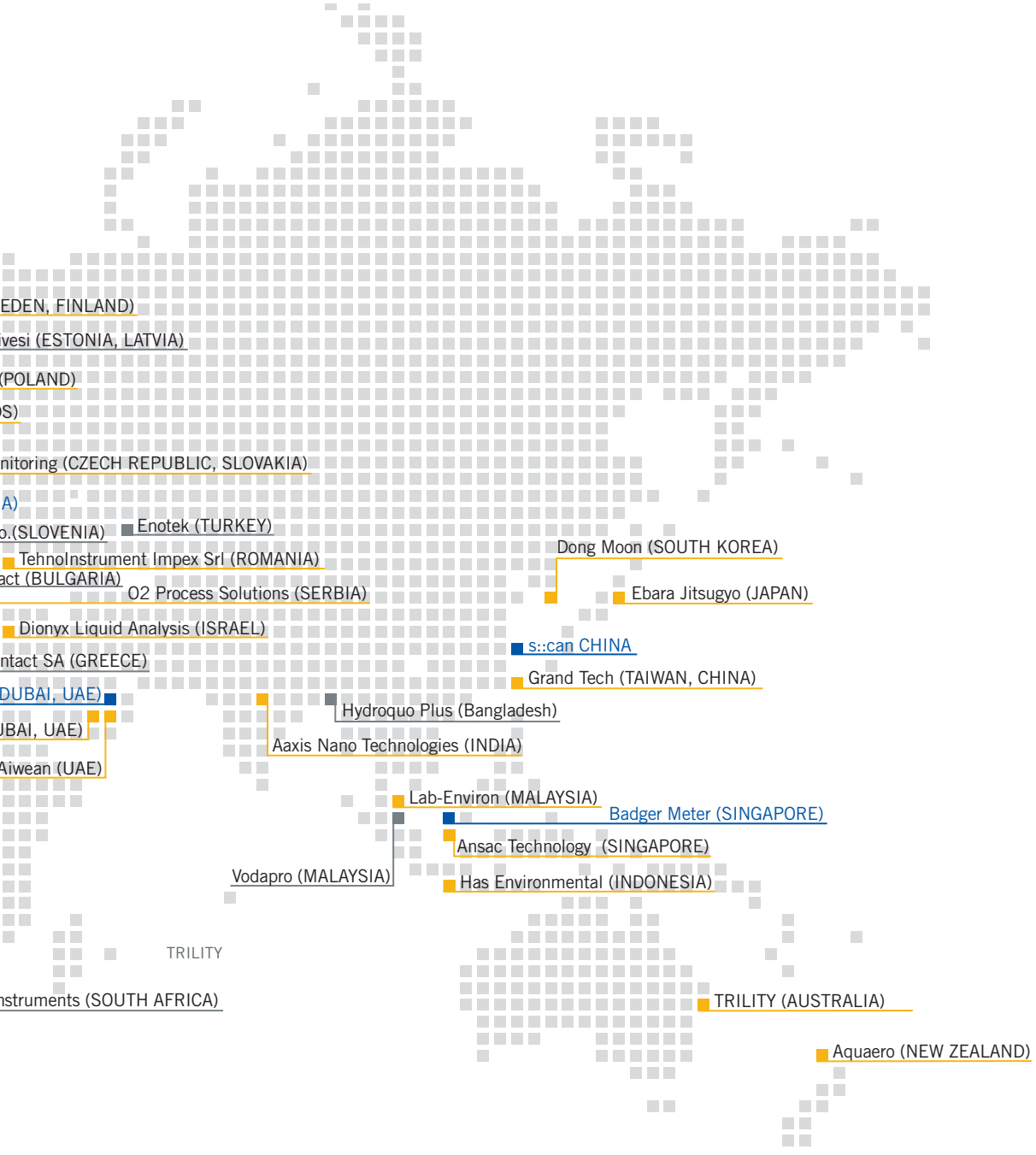
· initialisation of all s::can probes and initialisation of all parameters
· initialisation of autobrush / cleaning valve / pressure sensor / flow detector
· check of system configuration and test certificate

technical specification	
part number	X-sys-config

s::can
A Badger Meter® Brand



STATUS :: Headquarters, Representative Office, Affiliate
STATUS :: Gold Sales Partner
STATUS :: Silver Sales Partner


EDEN, FINLAND)
ivesi (ESTONIA, LATVIA)
(POLAND)
S)
nitoring (CZECH REPUBLIC, SLOVAKIA)
A)
o.(SLOVENIA)
Enotek (TURKEY)
TehnoInstrument Impex Srl (ROMANIA)
act (BULGARIA)
O2 Process Solutions (SERBIA)
Dong Moon (SOUTH KOREA)
Ebara Jitsugyo (JAPAN)
Dionyx Liquid Analysis (ISRAEL)
ntact SA (GREECE)
s::can CHINA
Grand Tech (TAIWAN, CHINA)
DUBAI, UAE)
Hydroquo Plus (Bangladesh)
UBAI, UAE)
Aaxis Nano Technologies (INDIA)
Aiwean (UAE)
Lab-Environ (MALAYSIA)
Badger Meter (SINGAPORE)
Ansac Technology (SINGAPORE)
Vodapro (MALAYSIA)
Has Environmental (INDONESIA)
TRILITY
nstruments (SOUTH AFRICA)
TRILITY (AUSTRALIA)
Aquaero (NEW ZEALAND)

s::can Sales Partners

US HEADQUARTERS
ADDRESS 4545 W Brown Deer Rd, Milwaukee, WI 53223, USA
PHONE +1 / 414 355 04 00
WEB www.badgermeter.com

US USA
ADDRESS 6 Iron Bridge Drive Collegeville, PA 19426, USA
PHONE +1 / 888 694 32 30
EMAIL sales@s-can.us
WEB www.s-can.us

AT AUSTRIA
ADDRESS Brigittagasse 22-24 1200 Vienna, AUSTRIA
CONTACT Robert Wurm
PHONE +43 / 1 / 219 73 93
EMAIL sales@s-can.at
WEB www.s-can.at

ES SPAIN
ADDRESS Ciutat de Granada 28 bis, 1a planta 08005 Barcelona
CONTACT Jordi Raich
PHONE + 34 / 930 218 447
EMAIL sales@s-can.es
WEB www.s-can.es

FR FRANCE
ADDRESS 370 route de Saint Canadet 13100 Aix en Provence
CONTACT Philippe Marinot
PHONE + 33 / 4 42 20 35 01
EMAIL sales@s-can.fr
WEB www.s-can.fr

IT ITALY
CONTACT Alessandro Morra
PHONE +39 / 333 983 5634
EMAIL amorra@s-can.at
WEB www.s-can.at

GB UNITED KINGDOM
ADDRESS Technology House, Gatehead Business Park Delph, Saddleworth, OL3 5DE
CONTACT Tom Lendrem
PHONE +44 / 1457 600 728
EMAIL tlendrem@badgermeter.com
WEB www.analyticaltechnology.com

CN CHINA
ADDRESS Rm D/17F Building B, 1118 Changshou Rd. 200042 Shanghai
CONTACT Li Xiao
PHONE +86-21 / 340 603 11
EMAIL lxiao@s-can.cn
WEB www.s-can.cn

AE UNITED ARAB EMIRATES
ADDRESS Thuraya Tower 1, Al Sufouh, Dubai Internet City Dubai
CONTACT (Water Quality) Vijaya Sarathi Ramasamy
PHONE +971 / 456 491 09
EMAIL vramasamy@badgermeter.com
WEB www.badgermeter.com

SG SINGAPORE
ADDRESS Singapore Branch Office, 28 Ayer Rajah Crescent #08-06, Singapore 139959
CONTACT (Water Quality) Jonathan Chan
PHONE +65 / 634 648 36
EMAIL jchan@badgermeter.com
WEB www.badgermeter.com

MX MEXICO
CONTACT Efrain Hernández Reyes
PHONE +52 / 4044 8729
EMAIL sales@s-can.mx
WEB www.s-can.mx

AE UNITED ARAB EMIRATES
ADDRESS 2-052, Insta Space Business Center Co Dubai
CONTACT Xavier Craysac
PHONE +971 / 545 564 300
EMAIL info@waen.ai
WEB www.waen.com
STATUS Gold Sales Partner

AE UNITED ARAB EMIRATES
ADDRESS 14675, Dubai, U.A.E. Al Qusais Industrial Area 4, Warehouse 1 & 2 United Arab Emirates
CONTACT Lord Rajpar
PHONE +971 / 2 551 94 45
EMAIL info@desconllc.com
WEB www.desconllc.com
STATUS Gold Sales Partner

AU AUSTRALIA
ADDRESS 27 Commerce Circuit, Yatala, QLD, 4207
CONTACT Viral Tripathi
PHONE +61 / 8 8408 6500
EMAIL VTripathi@trility.com.au
WEB www.trility.com.au
STATUS Gold Sales Partner

BD BANGLADESH
ADDRESS House-108, Road-11, Block-C, Banani, Dhaka-1213, Bandgladesh PO # 1100
CONTACT Zahin Razeen
PHONE +880 / 175 437 976 1
EMAIL zahinrazeen@hydroquo.org
WEB www.hydroquo.com
STATUS Silver Sales Partner

BE BELGIUM
ADDRESS Hogenakkerhoekstraat 14, 9150 Kruibeke
CONTACT Dirk Vleminckx
PHONE +32 / 3 / 250 15 70
EMAIL elscolab@elscolab.com
WEB www.elscolab.com
STATUS Gold Sales Partner

BG BULGARIA
ADDRESS 46, Prof. Kiril Popov Str, 1734 Sofia, Studentski Grad
CONTACT Dimitris Kouvas
PHONE +359 / 24 68 48 67
MOBILE +359 / 89 36 15 770 - 71
EMAIL bg@scientact.com
WEB www.scientact.com
STATUS Silver Sales Partner

BR BRAZIL
ADDRESS R. Minerva, 129 - Perdizes, São Paulo SP, 05007-030
CONTACT Mariana Carnielli
PHONE +55 / 11 997 58 - 4023
EMAIL mariana.carnielli@pensalab.com.br
WEB www.pensalab.com.br
STATUS Silver Sales Partner

STATUS :: Headquarters, Representative Office, Affiliate
STATUS :: Gold Sales Partner
STATUS :: Silver Sales Partner

CA	CANADA	Arrow Technology Group
	ADDRESS	11432 215 Street (Winterburn Rd.), T5S 2Y3, Edmonton, Alberta
	CONTACT	Lyndon Lobo
	PHONE	+1 / 780 / 701 40 50
	EMAIL	lyndon@atg.net
	WEB	www.atg.net
	STATUS	Silver Sales Partner
CA	CANADA	Aquatic Life Ltd.
	ADDRESS	34 Alexander Avenue R0E 1L0 Pinawa, MB
	CONTACT	Jeff Simpson
	PHONE	+1 / 204 / 753 52 70
	EMAIL	aquatic@aquaticlife.ca
	WEB	www.aquaticlife.ca
	STATUS	Gold Sales Partner
CH	SWITZERLAND	Uniqtech /Unimon GmbH
	ADDRESS	Vorbühlstrasse 21, CH-8962 Bergdietikon
	CONTACT	Martina Hofer
	PHONE	+ 41 / 43 444 95 56
	EMAIL	info@unimon.ch
	WEB	www.unimon.ch
	STATUS	Gold Sales Partner
CL	CHILE	Nereus SpA
	ADDRESS	El Ventisquero 1204, Bodega 43 8640000 Renca – Santiago, Chile
	CONTACT	Jose A Hernandez
	PHONE	+56 / 2 / 224 212 67
	EMAIL	jhernandez@nereus.cl
	WEB	www.nereus.cl
	STATUS	Gold Sales Partner
CO	COLOMBIA	Inteccon Colombia SAS
	ADDRESS	Cra 43A #19-17 local 9513, Medellín
	CONTACT	Gustavo Palacio & Rodrigo Rozzo
	PHONE	+57 / 311 356 80 51
	EMAIL	sales@intecconinc.com
	WEB	www.intecconinc.com
	STATUS	Gold Sales Partner
CR	COSTA RICA	Innovagua SA
	ADDRESS	100 m Norte de Proursa, Diagonal AyA, Ipís, Goicoechea, 10805 San José
	CONTACT	Kenneth Mena
	PHONE	+506 / 2245 0269
	EMAIL	ventas@innovagua.com
	WEB	www.innovagua.com
	STATUS	Silver Sales Partner
CZ	CZ CZECH REPUBLIK	ECM ECO Monitoring, s. r. o
	ADDRESS	Dobrá 240 73951 Dobrá
	CONTACT	Peter Smitek
	PHONE	+420 / 558 / 60 17 27
	EMAIL	ecmdobra@ecomonitoring.cz
	WEB	www.ecomonitoring.cz
	STATUS	Silver Sales Partner
DK	DENMARK	LØWENER Industri ApS
	ADDRESS	Smedeland 2 2600 Glostrup
	CONTACT	Lars Nissen-Petersen
	PHONE	+45 / 43 200 300
	EMAIL	lnp@loewener.dk
	WEB	www.loewener.de
	STATUS	Gold Sales Partner
EE	ESTONIA	Mativesi OÜ
	ADDRESS	Pae 4, Pärnu, 80042 Pärnu
	CONTACT	Matthias Eichhorst
	PHONE	+372 / 519 279 81
	WEB	www.mativesi.ee
	STATUS	Silver Sales Partner
FI	FINLAND	Luode Consulting
	ADDRESS	Sinimaentie 10 B 02630 Espoo
	CONTACT	Mikko Kiirikki
	PHONE	+358 / 40 / 867 83 66
	EMAIL	mikko.kiirikki@luode.net
	WEB	www.luode.net
	STATUS	Gold Sales Partner
GR	GREECE	Scientact SA
	ADDRESS	16 Kanari St., 55644 Thessaloniki
	CONTACT	Dimitris Kouvas
	PHONE	+30 / 2310 / 946 126
	EMAIL	dgk@scientact.com.gr
	WEB	http://www.scientact.com.gr
	STATUS	Silver Sales Partner
ID	INDONESIA	Has Environmental
	ADDRESS	Ruko Mega Cempaka Mas Blok i No.12, Jl. Letjend Soeprapto – Jakarta Pusat
	PHONE	+62 / 21 429 0000-7
	EMAIL	info@has-environmental.com
	WEB	www.has-environmental.com
	STATUS	Gold Sales Partner
IE	IRELAND	Coftec
	ADDRESS	MOANBAUN, ATHENRY, CO. GALWAY, H65 Y078
	CONTACT	Darragh Hobbs
	PHONE	+353 / 91 844356
	EMAIL	info@coftec.ie
	WEB	www.coftec.ie
	STATUS	Gold Sales Partner
IN	INDIA	Aaxis Nano Technologies
	ADDRESS	SCF 78, 2nd Floor, Phase 2, SAS Nagar District Mohali, State Punjab, 160055
	CONTACT	Sanjeev Gogia
	PHONE	+91 / 172 / 509 82 79
	EMAIL	info@aaxisnano.com
	WEB	www.aaxisnano.com
	STATUS	Gold Sales Partner
IL	ISRAEL	Dionyx Liquid Analysis Ltd.
	ADDRESS	Hasadna 13 Street 4365006 Ra'anana
	CONTACT	Leon Foror
	PHONE	+972 / 9 886 6052
	EMAIL	leon@dionyx.co.il
	WEB	www.dionyx.co.il
	STATUS	Gold Sales Partner
IT	ITALY	Isoil Industria spa
	ADDRESS	Via F.lli Gracchi, 27 20092 Cinisello Balsamo MI
	CONTACT	Roberto Vesprini
	PHONE	+39 / 02 660 272 38
	EMAIL	vendite@isoil.it
	WEB	www.isoil.it
	STATUS	Gold Sales Partner
JP	JAPAN	Ebara Jitsugyo Co. Ltd.
	ADDRESS:	Environmental Measuring Instrument Technology Center 2-3-12 Kurigi, Asao-ku, Kawasaki-shi, 215-0033 Kanagawa
	CONTACT	Masahiro Kanai
	PHONE	+81 / 44 / 981 05 60
	EMAIL	kanai@ejk.co.jp
	WEB	www.ejk.co.jp
	STATUS	Gold Sales Partner

KR	KOREA	Dong Moon ENT Co., Ltd
	ADDRESS	#501, #503~#505, Woolim e-Biz Center II, 12, Digital-ro 33-gil , Guro-gu, Seoul, 08377
	CONTACT	Song Yo Ill
	PHONE	+82 / 2 / 890 35 91
	EMAIL	dongmoonent@naver.com
	WEB	http://www.dongmoonent.co.kr
	STATUS	Gold Sales Partner
MY	MALAYSIA	Lab-Environ Instruments Sdn Bhd
	ADDRESS	C-3A-6, Kuchai Exchange, No. 43 Jalan Kuchai Maju 13 58200 Kuala Lumpur
	CONTACT	Range Lee Kwong Leng
	PHONE	+60 / 3 / 798 434 58
	EMAIL	sales@lab-environ.com
	WEB	www.lab-environ.com
	STATUS	Gold Sales Partner
MY	MALAYSIA	Vodapro SDN BHD
	ADDRESS	100, Jalan Pusat Perniagaan 1 Pusat Perniagaan, Jalan Raja Uda 12300 Butterworth, Pinang
	CONTACT	Wai Chun Yee
	PHONE	+60 / 16 559 7062
	EMAIL	wai@vodaproasia.com
	WEB	www.vodaproasia.com
	STATUS	Silver Sales Partner
NL	NETHERLANDS	Qsenz B.V.
	ADDRESS	Maricoweg 15A 1791 MD - Den Burg - Texel
	CONTACT	Ewout Riteco
	PHONE	+31 / 222 76 00 16
	EMAIL	ewout.riteco@qsenz.nl
	WEB	www.qsenz.nl
	STATUS	Gold Sales Partner
NO	NORWAY	Pemac AS
	ADDRESS	Barstølveien 50F, P.O. Box 9038 4696 Kristiansand
	CONTACT	Freddy Prøytz Ringstad
	PHONE	+47 / 38 / 05 61 00
	EMAIL	freddy@pemac.no
	WEB	www.pemac.no
	STATUS	Gold Sales Partner
NZ	NEW ZEALAND	Aquaero New Zealand Ltd
	ADDRESS	89 Colombo St Frankton Hamilton New Zealand 3204
	CONTACT	Philipp Jaser
	PHONE	+64 / 21 190 3007
	EMAIL	philipp@aquAero.co.nz
	WEB	https://www.linkedin.com/company/aquaero-new-zealand/
	STATUS	Gold Sales Partner
PL	POLAND	INTROL Sp. o.o.
	ADDRESS	40-519 Katowice, ul. Kościuszki 112
	CONTACT	Grzegorz Gruzka
	PHONE	+48 / 32 789 00 63
	EMAIL	ggruzka@introl.pl
	WEB	www.introl.pl
	STATUS	Gold Sales Partner
PT	PORTUGAL	Contimetra
	ADDRESS	Rua do Proletariado 15B Portela de Carnaxide, 2790-138 Carnaxide
	CONTACT	António Soares
	PHONE	+351 / 214 203 900
	EMAIL	industria@contimetra.pt
	WEB	www.zenzorcontrol.pt
	STATUS	Gold Sales Partner
RO	ROMANIA	TehnoInstrument Impex Srl
	ADDRESS	Laboratorului Street, no. 31B 100301 Ploiesti jud. Prahova
	CONTACT	Sebastian Codescu
	PHONE	+40 722 559 754
	EMAIL	office@tehnoinstrument.ro
	WEB	www.tehnoinstrument.ro
	STATUS	Gold Sales Partner
RS	SERBIA	O2 Process Solutions
	ADDRESS	Jurija Gagarina 179, 11073 Belgrad
	CONTACT	Dejan Otašević
	PHONE	+381 / 11 22 898 15
	EMAIL	o2ps@o2ps.rs
	WEB	www.o2ps.rs
	STATUS	Gold Sales Partner
SE	SWEDEN	Luode Consulting
	ADDRESS	Ronnebyvägen 2, 12152 Johanneshov
	CONTACT	Niklas Strömbeck
	PHONE	+46 / 70 / 850 96 69
	EMAIL	niklas.strombeck@luode.net
	WEB	www.luode.net
	STATUS	Gold Sales Partner
SG	SINGAPORE	Ansac Technology (S) Pte Ltd
	ADDRESS	35, Marsiling Industrial Estate Road 3, #02-01 Singapore 739257
	CONTACT	Steve Yeap
	PHONE	+65 / 984 346 03
	EMAIL	styeap@ansac-tech.com.sg
	WEB	www.ansac-tech.com.sg
	STATUS	Gold Sales Partner
SI	SLOVENIA	Microbium d.o.o.
	ADDRESS	Litijska cesta 261 1261 Ljubljana-Dobrunje
	CONTACT	Gregor Zupin
	PHONE	+386 / 30 255 470
	EMAIL	info@microbium.si
	WEB	www.microbium.si
	STATUS	Silver Sales Partner
SK	SLOVAKIA	ECM ECO Monitoring, a. s.
	ADDRESS	Nevädzová 5, 821 01 Bratislava
	CONTACT	Michal Ruzicka
	PHONE	+421 / 2 / 43 42 94 17
	EMAIL	ecm@ecm.sk
	WEB	www.ecomonitoring.com
	STATUS	Gold Sales Partner
TK	TURKEY	Enotek Müh. ve Danismanlik Hiz. Ltd. Sti.
	ADDRESS	Fulya Mah. Senol Sok. Feride Is Merkezi No:3 Kat:2, D:5, 34394 Sisli, Istanbul
	CONTACT	Kayhan Mert
	PHONE	+90 / 212 / 28 812 58
	EMAIL	kmert@enotek.com.tr
	WEB	www.enotek.com.tr
	STATUS	Silver Sales Partner
TW	TAIWAN, CHINA	Grand Tech (T.F.) Co., Ltd.
	ADDRESS	6F., No.6, Zhulin Rd. Linkou Dist. New Taipei City 244
	CONTACT	Kuan-Yi Ke
	PHONE	+886 / 2 / 86 01 36 63
	EMAIL	grand-tech@grand-tech.com.tw
	WEB	www.grand-tech.com.tw
	STATUS	Gold Sales Partner
ZA	SOUTH AFRICA	Action Instruments SA CC
	ADDRESS	7th Floor Everite House, 20 de Korte Street Braamfontein, 2001 Johannesburg
	CONTACT	Jacques Franken
	PHONE	+27 / 11 / 403 22 47
	EMAIL	sales@aisa.co.za
	WEB	www.aisa.co.za
	STATUS	Silver Sales Partner

Notes

abbreviation list	
est	estimated
f	filtered
eq	equivalent
color app	color apparent
color tru	color true (filtered)

Release: October 2023

s::can
A Badger Meter® Brand

HEADQUARTERS AUSTRIA
s::can GmbH • Brigittagasse 22-24, 1200 Vienna, Austria
T: +43 1 219 73 93, sales@s-can.at, www.s-can.at

HEADQUARTERS USA

Badger Meter Inc.
6 Iron Bridge Drive,
Collegeville,
PA 19426, USA
T: +1 888 6943230
sales@s-can.us
www.s-can.us

FRANCE

s::can France SARL
370 route de Saint
Canadet, 13100 Aix en Pro-
vence, France
T: +33 4 42203501
sales@s-can.fr
www.s-can.fr

SPAIN

s::can Iberia Sistemas de
Medición S.L.U.
Ciutat de Granada 28 bis, 1a
Planta,
08005 Barcelona, Spain
T: +34 930 218447
sales@s-can.es, www.s-can.es

ITALY

s::can Contact Italy:
Alessandro Morra
T: +39 333 9835634
amorra@s-can.at

UNITED KINGDOM

Badger Meter UK/ATi UK
Technology House,
Gatehead Business Park,
Delph, Saddleworth OL35 DE,
United Kingdom
T: 44 1753 566100
sales@atiuk.com
www.analyticaltechnology.com

CHINA

s::can China
Representative Office
Rm D/17F Building B, 1118
Changshou Rd.
200042 Shanghai, China
T: +86 21 34060311
sales@s-can.cn
www.s-can.cn

DUBAI

Badger Meter Middle East
Water Quality contact:
Vijaya Sarathi Ramasamy
Thuraya Tower 1, Al Sufouth,
Dubai Media City, Dubai, UAE
T: +971 4 5649190
badgerME@badgermeter.com
www.badgermeter.com

SINGAPORE

Badger Meter Asia
Water Quality Contact:
Johnathan Chan
80 Marine Parade Road,
#19-07 Parkway Parade,
Singapore 449269
T: +65 63 464836
jchan@badgermeter.com
www.badgermeter.com

MEXICO

Badger Meter Mexico
Water Quality Contact:
T: +52 55 72217700
sales@s-can.mx
www.s-can.mx