

SevenExcellence™



**SevenExcellence™**

pH, ISFET

Conductivity

ORP/Redox

Ion Concentration



**Excel in the Lab with SevenExcellence™**

Unmatched pH Performance

**METTLER TOLEDO**

# Flexible and Efficient Lab Work

## Precise and Secure

**SevenExcellence™ stands for convenient, easy-to-understand operation combined with high measurement accuracy and outstanding reliability. The instrument can effectively cope with complex applications and stringent requirements in regulated markets, but it also feels at ease with routine measurement tasks in the laboratory.**

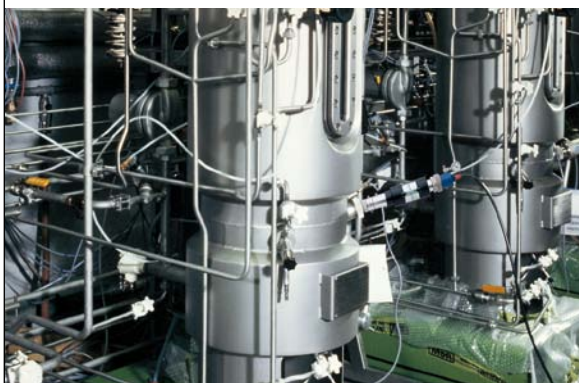
The instrument can be employed in different segments and workplaces, with tasks ranging from product characterization in R&D, through screening of numerous samples, to production and quality assurance. The properties of SevenExcellence and its interplay with a large selection of peripherals fulfill the requirements in the various application areas in the best possible way.

### From 1 million compounds in R&D...



The tasks you require from your instrumentation cannot be more diverse than in pure Research & Development. The samples are large in number, have varying characteristics and require different analysis parameters. This means you need a flexible meter that performs the pH, redox, ion and conductivity analyses quickly and reliably. SevenExcellence supports your workflow in the best possible way so you can keep up with the demand and pace of sample analysis in R&D.

### ...via several candidates in small scale production...



During small scale production the goal is to obtain the promising candidates in large enough quantities for detailed screening. Precisely controlling the purity of reagents used, monitoring of the reaction conditions and the outcome of the experiment is important to ensure traceability and repeatability. The key is a pH meter that measures precisely and accurately, and allows for proper GLP documentation. With its methods built around strictly defined parameters and its extensive GLP properties, SevenExcellence is the ideal choice.



**...to one substance in manufacturing ...**



During manufacturing the lead substance is produced in large quantities. Its' quality must be ensured through the complete process, starting with monitoring cleaning-in-process water from the cleaned equipment and ending with the verification of the product's purity. For each step not only accuracy but also documentation and compliance are especially important. The highly accurate SevenExcellence with its sophisticated user management and strict and secure methods stand up to these demanding tasks.

**... whose quality needs to be ascertained in QA**



Following production, the substance undergoes formulation for its intended purpose. The purity of the substance produced, the materials used and the final formulation needs to be checked and documented. A pH-meter of highest accuracy with excellent data handling and archiving capabilities is required. Strictly defined measurement parameters are also necessary to ensure results are compliant with SOP's. SevenExcellence with its strict methods and data management leaves nothing to chance.



# Improved Lab Work from the Start

## Intuitive and Clear

The operation of SevenExcellence™ is so intuitive that it can be immediately deployed without requiring long periods of user familiarization. Starting an analysis, changing the settings and accessing the results is easily achieved thanks to the cleverly-devised touch screen menu operation.

The large clear color display and the state-of-the-art touch screen operation makes working with this instrument particularly enjoyable. The instrument's operation has been designed to support your workflow in the lab. Selecting the right settings in the menu is intuitive because the instrument speaks your language.

### Large color display



The huge 7 inch high resolution color display has large digits, intuitive buttons and well arranged icons so that you identify the most relevant information at a glance.

### All parameters or the essentials



The instrument gives you the choice! By a single keypress you can switch between two different views with varying degrees of information. In the uFocus™ view, you will not be distracted by information that is of less importance.

### Intuitive touch screen operation



The capacitive touch screen with clear buttons and an intuitive menu structure makes the instrument's operation fast and easy. The menus exist in 10 languages and do not contain a single cryptic expression!





Discovery of PCR (Polymerase Chain Reaction) has made amplification of DNA sequences a simple and convenient standard technique.

**OneClick™ methods – quick and revolutionary**



By a single click on a shortcut you can start a method: a sequence of analysis steps with fixed pre-set parameters. Using methods makes sure that your particular analysis is always performed with identical settings.

**Perfect ergonomics and high productivity with uPlace™**



uPlace™: the electrode arm can be operated with one hand, moving perfectly straight up and down to bring the electrode in the perfect position. This allows for faster measurements and poses less risk of the sample vessel tipping over and damaging the sensor!

**Direct measurements – tried and trusted**



This instrument encompasses a second possibility to start a measurement or calibration by pressing READ or CAL. Although more flexible, performing direct measurements in a row with varying parameters requires a change of settings before each sample.

# Flexibility in all Respects

## Versatile and Manifold

**SevenExcellence™ offers flexibility on all levels, ranging from the number of measurement parameters to the choice of a vast collection of peripheral devices. The instrument's interfaces allow you to connect peripherals simultaneously, supporting your workflow in the best possible way.**

The instrument allows two completely different types of analyses, supporting the workflow of users with different preferences and needs. Methods are especially suitable for analyses that require strictly defined parameters, such as in quality assurance. Direct measurements on the other hand are useful for R&D purposes as the parameters for each measurement can be changed easily.

### Modularity – expand at any time



SevenExcellence fits three modules in any composition and order. It offers the highest possible flexibility as you can expand the instrument at any time, adding new measurement parameters.

### Connectivity and peripheral options



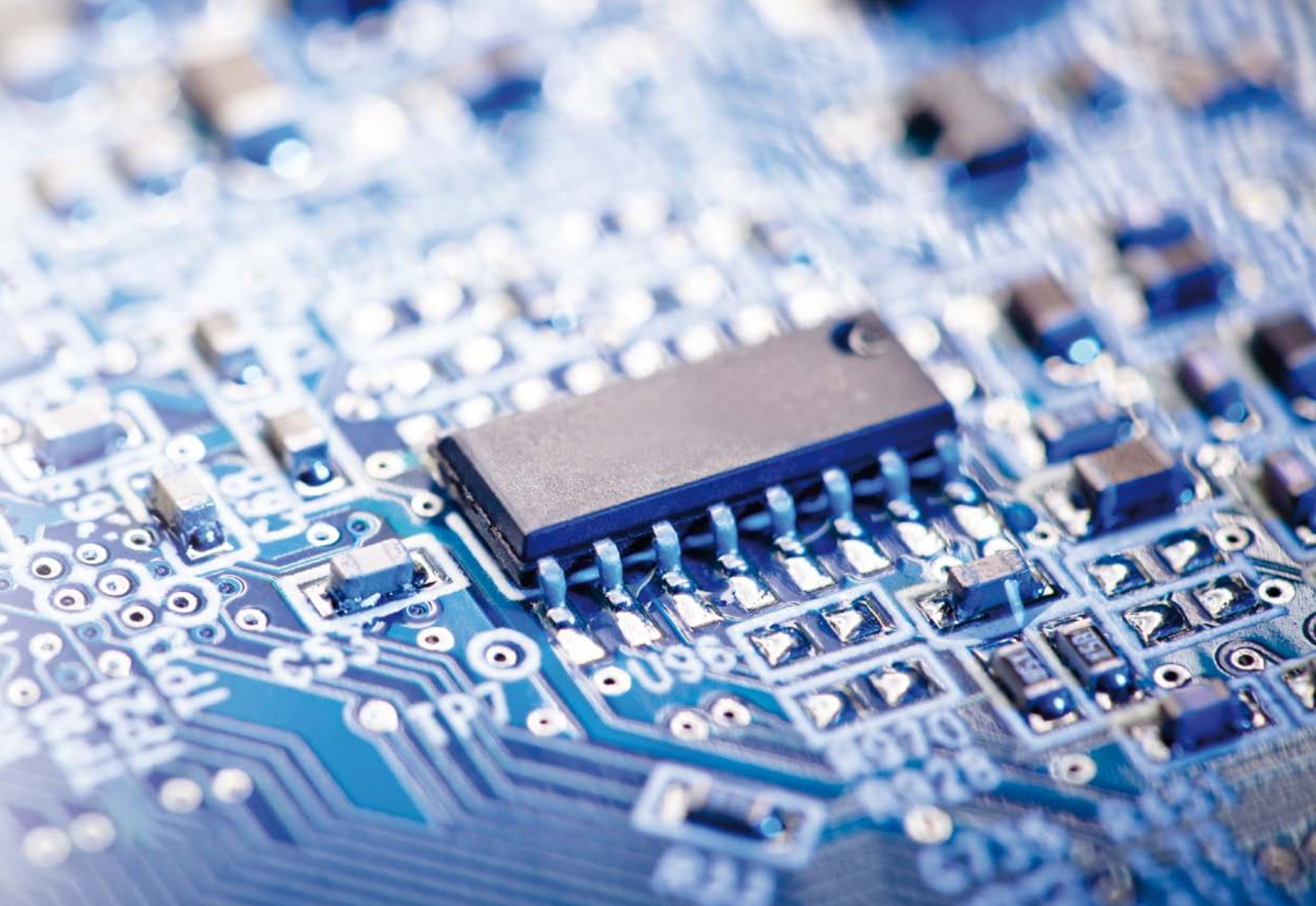
SevenExcellence has USB, Ethernet and RS232 interfaces, allowing the connection of a barcode reader, Rondolino sample changer, USB stick, network and METTLER TOLEDO printers and a PC with LabX® direct software.

### Flexible buffer choice and creation



Choose from our large collection of pre-defined calibration buffers and standards, or create your own with only a few clicks. Our Pick-and-Mix™ feature allows you to conveniently combine pH buffers from different buffer groups.





The invention and subsequent rapid development of electronics has enhanced flexibility and performance in all areas of daily life.

### Flexible temperature signal choice



SevenExcellence offers high flexibility for temperature signal input: use the signal of the integrated temperature sensor, connect an external (separate) temperature probe or enter the temperature manually.

### Free choice with the number of parameters



SevenExcellence allows for measurements of 1, 2 or 3 parameters simultaneously, either in the same or different samples. With multi-channel measurements the temperature signal from one module can be used for all others to ensure identical temperature readings!

### Useful magnetic stirrer



The optional uMix™ magnetic stirrer from METTLER TOLEDO provides an extra degree of flexibility for methods. Stirring can be setup individually for measurement or waiting steps in your method and the stir speed adjusted to reflect the sample's vessel size and viscosity.



# Extensive Security Functions

## Innovative and Reliable

**SevenExcellence™ comes with security functions that support your workflow during all phases of the calibration, measurement data collection and archiving process. Its ingenious package makes the instrument suitable for routine tasks and professional measurements under stringent GLP conditions alike.**

The instruments' focus on workflow is also reflected in its security package. Mistakes are minimized to an absolute minimum by using methods, through the professional user management and the sophisticated calibration support. Archiving results can be done automatically by creating a hardcopy on a METTLER TOLEDO or network printer and/or transfer to LabX® direct PC software.

### User Management – suits the needs of any user



SevenExcellence has an ingenious user management with four levels from operator to administrator, each with progressively more rights. This allows the assignment of rights to a user that match his experience and authorization level. The risk of unintentional or unauthorized changes of settings and deletion of results is eliminated!

### Security via methods



Methods provide a high degree of security ensuring that the analyses are always performed with identical settings and parameters. Behind method modification are user management rights that can be further restricted so that changes are only allowed by the method's creator.

### Intelligent Sensor Management



ISM® sensors are automatically identified by the instrument, preventing the use of the wrong sensor ID by mistake. Furthermore, calibration data is stored on the sensor and upon connection it is automatically transferred to the instrument for further use.



The discovery of the protective coating technique has increased the lifetime of products, because it protects the core material from exposure to outside elements.

**Professional calibration –  
makes calibrations so easy**



The instrument provides calibration support on many levels, featuring methods with a fixed calibration sequence, automatic evaluation of the calibration results with optional rejection and monitoring of the sensor's age and calibration interval. Automatic calibration with the Rondolino sample changer is also possible!

**A wealth of GLP support –  
leaves nothing to coincidence**



The instrument comes with a package of GLP support functions, such as PIN protection, GLP printout format with all GLP relevant information and monitoring of measurement limits. Results in memory and printout are marked accordingly if they are outside the predefined limits.

**Radio controlled clock –  
no doubt about date and time**



The instrument has an integrated radio controlled clock for extra security. When enabled in a laboratory environment and geographic area with sufficient signal strength, you can rest assured that the instrument always displays the correct date and time.

# Efficient Workflow Support

## Contemporary and Convenient

**SevenExcellence™** has been designed with the objective of optimizing the workflow and making work in the laboratory more efficient. Just one click is needed to start a sample or a series of measurement or an analysis series with an optional autosampler. Once setup, data archiving is a standard procedure that will take place automatically following each analysis.

With SevenExcellence the complete cycle from data entry to data archiving is as easy as possible. Stand alone the instrument offers good functionality, but increased efficiency and workflow optimization can be achieved by connecting peripherals.

### One Click™ methods – starting analyses quickly



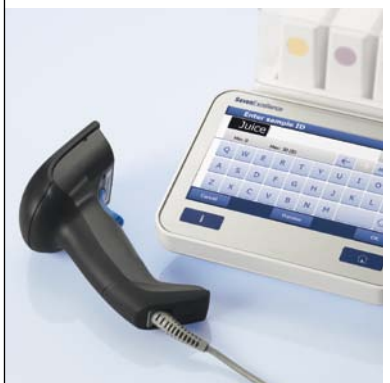
By a single click on a shortcut you can start a series or method. If started when running, the next analysis will be queued in the tasklist and starts automatically upon completion of the previous task.

### Series – consecutive samples with statistics



With Series it is possible to run several samples with the same method directly after one another. Not only does this increase the efficiency of the analysis, but also automatically generates statistical data such as mean value and standard deviation across the samples.

### Fast and convenient data entry



The instrument's touch screen operation makes the entry of text, e.g. sample ID's, possible in a quick and convenient way. To even further increase efficiency, you can use a USB barcode reader or USB keyboard.





Specifically developed sports nutrition has boosted efficiency, as it has led to increased athletic performance and shorter recuperation periods.

#### Automation with sample changer



SevenExcellence supports the Rondolino sample changer for methods and series, making automated or unassisted analyses possible. This not only gives you the possibility to focus on other tasks but also allows for special applications such as automated pH calibration.

#### Automatic data transfer with LabX® direct



The LabX direct pH PC software allows for easy and efficient export of results during analysis. The transfer settings for this software need to be activated only once in the instrument and will work automatically with plug-and-play.

#### Export of results to a USB stick



Users wishing to document results have an alternative to printing the data on a METTLER TOLEDO or network printer, as the instrument also supports exporting results in pdf format to a memory stick. This is especially interesting for a paperless laboratory.

# Supporting Compliance Requirements Elaborate and Tailored

**This instrument has been designed to help you meet the most stringent compliance requirements. SevenExcellence™ offers the ideal combination of innovative properties integrated within the instrument, appropriate documentation and services.**

METTLER TOLEDO also offers professional installation, qualification and calibration services. These not only guarantee accurate and precise measurements but also leave you free of concerns regarding compliance issues during quality audits.

## Sophisticated user management



The user management of SevenExcellence complies with the most stringent regulations. In the area of methods it ensures that only authorized users can create or modify methods, whereas others can only execute them. This offers the security that methods will not be altered unintentionally!

## Radio-controlled-clock for peace of mind



When enabling the radio-controlled-clock you have absolute certainty that the displayed date and time is correct. When the radioclock is used the result in the memory and printout is marked accordingly. In case the signal strength deteriorates the instrument notifies you.

## Fingerprint reader for secure access



In addition to typing a password, the instrument also supports the LogStraight™ external fingerprint reader. This not only offers a convenient login solution, but also provides an extra degree of security!





Medicine has become much more secure and projectable through the discovery of tablets, as they allow administration of the right drug dose in the right intervals.

## Comprehensive services



Professionally executed installation and qualification as well as regularly performed maintenance and calibration ensure error- and carefree instrument operation. Moreover, our qualification and calibration services support you in fulfilling regulatory compliance and provide you with essential documentation required during quality audits.

## Service Solutions

Service products and solutions constitute sustainable contribution to cost savings and satisfying regulatory demands.

### Installation and Qualification

METTLER TOLEDO provides installation and qualification services for all types of analytical instrumentation including meters. Standardized installation procedures as well as instrument-specific qualification consisting of IQ/OQ and corresponding Equipment Qualification document (EQPac) are essential for efficient and regulatory compliant instrument operation.

### Maintenance and Calibration

Annual preventive maintenance, and calibration services ensure a faultless instrument operation, saving costs on unexpected repair and/or verification activities. Instrument calibration with the traceable tools ensures reliability of the generated results and regulatory compliance.



# SevenExcellence™ pH/mV

## Professional and Flexible

**SevenExcellence™ pH/mV meter redefines flexibility and also offers various measurement parameters in one meter. It not only measures pH and ORP with classical sensors, but also supports pH measurement with ISFET technology.**

Flexibility is also reflected through the numerous measurement, calibration and endpoint possibilities. The measurement endpoints after a pre-defined interval when using the timed endpoint setting and only after user interaction when using the manual setting. It is also possible to endpoint the measurement automatically according to pre-defined or user-defined endpoint criteria.

### Professional pH calibration



Choose from one of eight pre-defined calibration buffers groups or easily create your own. With the Pick-and-Mix™ feature you can conveniently combine pH buffers from different groups. After calibration the sensor icon shows you the quality of the calibration at a glance.

### Methods for secure and efficient calibrations



Using methods is a secure and efficient way of calibrating a pH sensor. Once a method is created, each calibration will use identical settings. Limits for offset and slope can be monitored to avoid a poor calibration from being stored.

### Sensor test



SevenExcellence offers the possibility to check the performance of a pH sensor. The special method type sensor test guides the user through the individual steps, checking various measurement characteristics of a sensor, such as drift and repeatability.



### Description and order information for SevenExcellence™ pH/mV

	Measuring range	Resolution	Accuracy
<b>pH</b>	-2.000 ... 20.000	0.001 / 0.01 / 0.1	± 0.002
<b>mV*</b>	-2000.0 ... 2000.0	0.1 / 1	± 0.1
<b>ISFET pH</b>	0.000 ... 14.000	0.001 / 0.01 / 0.1	± 0.05
<b>Temperature**</b>	-30.0 ... 130.0 °C	0.1 °C	± 0.1 °C

<b>Calibration</b>	Max. 5 points, 8 pre-defined and 20 user-defined buffer groups
<b>Methods</b>	17 pre-defined and 60 user defined methods
<b>System</b>	Date/time, PIN-protection, user management, 10 languages
<b>Data storage</b>	At least 20000 data points, 250 analyses
<b>Data export</b>	USB-Stick, LabX® direct PC software

\* Instrument can also measure rel. mV / \*\* Temperature choice between °C and °F

Order info	Description and sensors	Order no.
S 4 0 0 - B a s i c (instrument)	Includes instrument, pH/mV expansion unit, 2 blank expansion units, uPlace™ electrode holder, semi-transparent cover, operating instructions, installation and quick guide, LabX® direct pH PC software, declaration of conformity and test certificate.	30046240
S400-Kit (kit)	As S400-Basic, but also with InLab® Expert Pro-ISM, guide to pH measurements and 2 buffer sachets for pH 4.01, 7.00, 9.21 and 10.00.	30046241
S400-Bio (kit)	As S400-Kit but with InLab® Routine Pro-ISM cable kit instead of InLab® Expert Pro-ISM.	30046242
S400-ISFET (kit)	As S400-Kit but with InLab® 490 instead of InLab® Expert Pro-ISM.	30046243

For dual channels and triple channel order information see page 17 and page 19 respectively.

# SevenExcellence™ Conductivity

## Professional and Contemporary

**SevenExcellence™ Conductivity meter is a flexible and modern meter that is suitable for professional and routine measurements alike. In addition to conductivity it also measures various other parameters such as resistivity, salinity, total dissolved solids and conductivity ash.**

The instrument supports your workflow, making conductivity measurements as easy as possible. For special applications such as USP/EP and conductivity ash it guides you through the measurement steps and notifies you when a measurement is out of range.

### Methods – a perfect match for conductivity



In addition to being more secure, more reproducible due to identical settings and more convenient, methods also enable you to run special applications for conductivity. These include USP/EP measurement of pure water with limits monitoring and Conductivity Ash measurements according to two ICUMSA regulations.

### Pure water – high accuracy for low conductivity



Low conductivity measurement requires special attention. When measuring pure or ultra-pure water there are several sources of potential error such as carbon dioxide from air and temperature inaccuracy. Our digital conductivity cell InLab® Trace, with high temperature accuracy and optional flow through cell now provides the perfect solution.

### Temperature compensation for pure water



For pure water SevenExcellence offers a special temperature compensation mode to increase the reliability of your readings. For USP/EP measurements the temperature compensation must be disabled to comply with the regulations. These settings are automatically applied when the predefined USP/EP method.





### Description and order information for SevenExcellence™ Conductivity

	Measuring range	Resolution	Accuracy
<b>Conductivity*</b>	0.001 $\mu$ S/cm ... 2000 mS/cm	0.001 ... 1	$\pm$ 0.5%
<b>Temperature**</b>	-30.0 ... 130.0 °C	0.1 °C	$\pm$ 0.1 °C

<b>Calibration</b>	13 pre-defined and 20 user-defined standards
<b>Temperature compensation</b>	Linear, non-linear, off, pure-water; reference temperature 20 °C or 25 °C
<b>Methods</b>	17 pre-defined and 60 user defined methods
<b>System</b>	Date/time, PIN-protection, user management, 10 languages
<b>Data storage / Data export</b>	At least 20000 data points, 250 analyses / USB-Stick, LabX® direct PC software

\*Instrument can also measure salinity, resistivity and total dissolved solids / \*\* Temperature choice between °C and °F

Order info	Description and sensors	Order no.
S700-Basic (instrument)	Includes instrument, conductivity expansion unit, 2 blank expansion units, uPlace™ electrode holder, semi-transparent cover, operating instructions, installation and quick guide, LabX® direct pH PC software, declaration of conformity and test certificate.	30046244
S700-Kit (kit)	As S700-Basic, but also with InLab® 731-ISM, guide to conductivity measurements and 2 calibration sachets for 1413 $\mu$ S/cm and 12.88 mS/cm.	30046245
S700-Trace (kit)	As S700-Kit but with InLab® Trace instead of InLab® 731-ISM, with Flow-Cell and without calibration sachets.	30046246

#### Dual channel instrument with pH/mV and conductivity expansion units (for triple channel see page 19)

S470-Basic (instrument)	As S700-Basic, but with a pH/mV expansion unit instead of a blank expansion unit.	30046252
S470-Kit (kit)	As S700-Kit, but with but with a pH/mV expansion unit instead of a blank expansion unit. Additionally with InLab® Expert Pro-ISM, guide to pH measurements and 2 buffer sachets for pH 4.01, 7.00, 9.21 and 10.00.	30046253
S470-USP/EP (kit)	As S470-Kit but with InLab® 741-ISM instead of InLab® 731-ISM and InLab® Pure Pro-ISM instead of InLab® Expert Pro-ISM, BNC/RCA-MultiPin™ ISM-cable (1.2 m), and without 1413 $\mu$ S/cm and 12.88 mS/cm calibration sachets.	30046254

# SevenExcellence™ pH/Ion

## Professional and Powerful

The SevenExcellence™ pH/Ion meter combines the advantages of a professional pH meter with the flexibility of a powerful ion meter. It can measure pH and ORP as well ion concentration in six different units.

The wealth of measurement possibilities is also reflected in the large collection of compatible pH, ORP and Ion sensors available. If your special applications require you can also connect external temperature sensors as well as separate reference sensors.

### Incremental methods



Special methods for the most common incremental ion measurement techniques are included, such as various standard addition/subtraction and sample addition/subtraction methods. This gives you a flexible and contemporary tool kit for professional ion measurements!

### Full ion support



The twelve most commonly used ion types are pre-programmed in the instrument making the settings as convenient as possible. For others you can enter the ion charge and molar mass to ensure that all calculations and conversions are done for you.

### Ion measurements – flexible sensor choice



With SevenExcellence it is possible to use our perfectION™ series of combined ion selective electrodes as well our collection of half-cells. For measurements with half-cell sensors there is an input for connection of a reference electrode.



## Description and order information for SevenExcellence™ pH/Ion

	Measuring range	Resolution	Accuracy
<b>pH</b>	-2.000 ... 20.000	0.001 / 0.01 / 0.1	± 0.002
<b>mV*</b>	-2000.0 ... 2000.0	0.1 / 1	± 0.1
<b>Ion concentration</b>	1.00E <sup>-9</sup> ... 9.99E <sup>+9</sup>	Last significant digit	± 0.5%
<b>Temperature**</b>	-30.0 ... 130.0 °C	0.1 °C	± 0.1 °C

<b>Calibration</b>	Max. 5 points, 8 pre-defined and 20 user-defined buffer groups
<b>Methods</b>	17 pre-defined and 60 user defined methods
<b>System</b>	Date/time, PIN-protection, user management, 10 languages
<b>Data storage / Data export</b>	At least 20000 data points, 250 analyses / USB-Stick, LabX® direct PC software

\* Instrument can also measure rel. mV / \*\* Temperature choice between °C and °F

Order info	Description and sensors	Order no.
S500-Basic (instrument)	Includes instrument, pH/ion expansion unit, 2 blank expansion units, uPlace™ electrode holder, semi-transparent cover, operating instructions, installation and quick guide, LabX® direct pH PC software, declaration of conformity and test certificate.	30046248
S500-Kit (kit)	As S500-Basic, but also with InLab® Expert Pro-ISM, guide to pH measurements and 2 buffer sachets for pH 4.01, 7.00, 9.21 and 10.00.	30046249
S500-Bio (kit)	As S500-Kit but with InLab® Routine Pro-ISM cable kit instead of InLab® Expert Pro-ISM.	30046250
S500-F (kit)	As S500-Kit but with PerfectION™ Fluoride instead of InLab® Expert Pro-ISM.	30046251

### Triple channel instrument with pH/Ion, pH/mV and conductivity expansion units

S475-Basic (instrument)	Includes instrument, pH/ion expansion unit, pH/mV expansion unit, conductivity expansion unit, uPlace™ electrode holder, semi-transparent cover, operating instructions, installation and quick guide, LabX® direct pH PC software, declaration of conformity and test certificate.	30046255
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# METTLER TOLEDO and Seven

– Added Value for Everyday Lab-Work ...

## ... with Routine Bench Meters

The SevenCompact™ series consists of two reliable single channel instruments for routine pH/Ion and conductivity measurements. They are described in a separate brochure with order number 30019036.



## ... with Corresponding Sensors

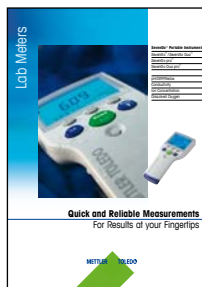
METTLER TOLEDO combines 60 years of experience of INGOLD in the production of electrochemical sensors with the innovative electronics of the Seven series.

The complete METTLER TOLEDO sensor portfolio is documented in a separate brochure with the order number 51724332.



## ... and for Use in the Field

The METTLER TOLEDO Seven range provides models for use in the lab as well as portable models for use in the field and in factories. The portable SevenGo™ and SevenGo Duo™ instruments are documented in a separate brochure with order number 51725122.



[www.mt.com/pH](http://www.mt.com/pH)

For more information

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Subject to technical changes

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Marketing pH Lab / Global MarCom Switzerland



**Quality certificate.** Development, production and testing according to ISO 9001.



**Environmental management system** according to ISO 14001.



**"European conformity"**. The CE conformity mark provides you with the assurance that our products comply with the EU directives.