

SensoLyt[®] 650-7 Ex

Ex ib IIC T6 Gb X

PH/ORP ARMATURE WITHOUT IMPEDANCE CONVERTER, WITH TEMPERATURE SENSOR,
SUITABLE FOR OPERATION IN POTENTIALLY EXPLOSIVE ATMOSPHERES



a xylem brand

DE Deutsch	Beachten Sie beim Betrieb in explosionsgefährdeten Bereichen die Sicherheitsanforderungen gemäß Dokument ba77057y.
EN English	For operation in a potentially explosive atmosphere, heed the safety requirements according to document ba77057y.
BG български	При работа във взривоопасна среда спазвайте изискванията за безопасност съгласно Документ 77057y.
CS Česky	Při provozu v oblastech ohrožených výbuchem prosím dodržujte bezpečnostní požadavky dle dokumentu ba77057y.
DA Dansk	Overhold sikkerhedskravene i henhold til dokument ba77057y ved drift i eksplosionsfarlige områder.
EL Ελληνικά	Κατά τη λειτουργία σε εκρήξιμες ατμόσφαιρες λάβετε υπόψη τις απαιτήσεις ασφάλειας σύμφωνα με το έγγραφο ba77057y.
ES Español	Al trabajar en zonas expuestas a explosiones observe las prescripciones de seguridad conforme al documento ba77057y.
ET Eesti keel	Plahvatusohtlikus keskkonnas käitamisel arvestage dokumendis ba77057y sätestatud ohutusnõuetega.
FI Suomi	Jos käytät laitetta räjähdysalttiilla alueilla, noudata asiakirjan 77057y mukaisia turvallisuusvaatimuksia.
FR Français	En cas d'utilisation dans les zones à risques d'explosion, respecter les exigences de sécurité selon le document ba77057y.
HR Hrvatski	Pri radu u područjima u kojima postoji opasnost od eksplozije pridržavajte se sigurnosnih zahtjeva u skladu s dokumentom ba77057y.
HU Magyar	Robbanásveszélyes területen történő üzemeltetés esetén vegye figyelembe a ba77057y jelű dokumentumban előírt biztonsági követelményeket.
IT Italiano	In caso di utilizzo in atmosfere potenzialmente esplosive osservare le disposizioni di sicurezza riportate nel documento ba77057y.
LT Lietuviškai	Dirbdami zonose su sprogia aplinka laikykite ba77057y dokumento saugumo technikos nurodymų.
LV Latviešu	Ekspluatācijas laikā, sprādzienbīstamajās zonās ievērojiet drošības prasības saskaņā ar dokumentu ba77057y.
NL Nederlands	Neem bij het gebruik in explosie-gevaarlijke omgevingen de veiligheidsvoorschriften volgens document ba77057y in acht.
NO Norsk	Ved bruk i eksplosjonsfarlige omgivelser skal du følge sikkerhetskravene i henhold til dokument ba77057y.
PL Polski	Przy eksploatacji w obszarach zagrożonych wybuchem należy przestrzegać wymogów bezpieczeństwa zgodnie z dokumentem ba77057y.
PT Português	Durante a operação nas áreas com risco de explosão, observar os requisitos de segurança de acordo com o documento ba77057y.
RO Română	În cazul utilizării în zone cu potențial exploziv, vă rugăm să respectați cerințele de siguranță conform documentului ba77057y.
RU Русский	При работе во взрывоопасных зонах соблюдайте инструкции по технике безопасности, приведенные в документе ba77057y.
SK Slovensky	Pri prevádzke v priestoroch s nebezpečenstvom výbuchu dodržiavajte bezpečnostné požiadavky uvedené v dokumente ba77057y.
SL Slovenščina	Ob obratovanju v eksplozijsko ogroženih območjih morate upoštevati varnostne zahteve v skladu z dokumentom ba77057y.
SV Svenska	Vid drift i områden med explosionsrisk ska säkerhetskraven enligt dokument ba77057y beaktas.
TR Türkçe	Lütfen patlama tehlikesi bulunan alanlarda kullanırken ba77057y numaralı belge doğrultusundaki güvenlik talimatlarını dikkate alınız.

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1 Overview

1.1 Structure of the SensoLyt® 650-7 Ex pH/ORP armature

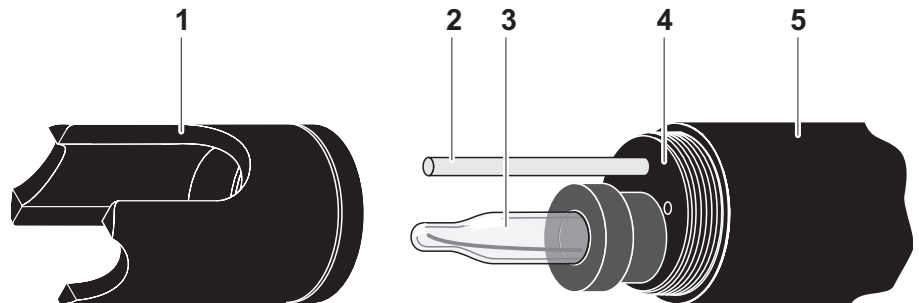


Fig. 1-1 Structure of the SensoLyt® 650-7 Ex pH/ORP armature

1	Protective hood
2	Temperature sensor
3	Combination electrode (not contained in the scope of delivery)
4	Electrode receptacle
5	Armature shaft



The pH combination electrodes to be used are available as accessories (see chapter 6 REPLACEMENT PARTS AND ACCESSORIES).

High-impedance measuring operation

With the SensoLyt® 650-7 Ex, the electrode voltage is transmitted to the measuring transmitter without impedance converter. The high-impedance pH/ORP input of the measuring transmitter is used for this.

1.2 Recommended fields of application



The SensoLyt® 650-7 Ex pH/ORP armature in conjunction with a pH or ORP electrode is suitable for stationary pH or ORP measurements in water and wastewater applications. Suitable electrodes are listed in chapter 6 REPLACEMENT PARTS AND ACCESSORIES).



2 Safety



2.1 Safety information


2.1.1 Hazard warnings in this operating manual

The hazard warnings are defined for the following levels of danger:

	 DANGER
	<p>DANGER indicates a possibly dangerous situation that causes death or serious injuries if the safety instruction is not followed.</p>

	 WARNING
	<p>WARNING indicates a possibly dangerous situation that can cause death or serious injuries if the safety instruction is not followed.</p>

	 CAUTION
	<p>CAUTION indicates a possibly dangerous situation that can cause slight or medium injuries if the safety instruction is not followed.</p>

	ATTENTION
	<p>ATTENTION indicates a situation where goods might be damaged if the actions mentioned are not taken.</p>

2.1.2 Safety information on the product

Note all labels, information signs and safety symbols on the product.


2.2 Safe operation

2.2.1 Authorized use

The authorized use of the SensoLyt® 650-7 Ex consists of the stationary measurement of pH or ORP and temperature in conjunction with a pH or ORP electrode in the following areas:

- Water and wastewater
- Environment
- Industry.

According to the directive 94/9/EC (ATEX), the SensoLyt® 650-7 Ex is approved for use in potentially explosive atmospheres. The characteristics concerning explosion protection as well as the safety instructions and other details are given in the enclosed documentation on explosion protection ba77057y. The documentation on explosion protection is available in numerous languages.

	⚠ DANGER
	<p>Danger of explosion. Noncompliance with the safety requirements according to the explosion protection documentation ba77057y can cause a potentially explosive atmosphere to detonate. Explosion protection is completely ensured only when all safety requirements are met.</p>

2.2.2 Requirements for safe operation

Note the following points for safe operation:

- The product may only be operated according to the authorized use specified above.
- The product may only be supplied with power by the energy sources mentioned in this operating manual.
- The product may only be operated under the environmental conditions mentioned in this operating manual.
- The product or its components may only be opened if this is required for installation and maintenance work and described in the operating manual.

2.2.3 Unauthorized use

The product must not be put into operation if:

- it is visibly damaged (e.g. after being transported)
- it was stored under adverse conditions for a lengthy period of time (storing conditions, see chapter 7 Technical data).



3 Commissioning

3.1 Scope of delivery

- SensoLyt® 650-7 Ex pH/ORP armature
The armature is equipped with a protective hood and protection caps
- Operating manual
- Documentation on explosion protection ba77057y

3.2 Installation

3.2.1 Use in potentially explosive atmospheres

	 DANGER
<p>Danger of explosion. Noncompliance with the safety requirements according to the explosion protection documentation ba77057y can cause a potentially explosive atmosphere to detonate. Explosion protection is completely ensured only when all safety requirements are met.</p>	

3.2.2 Connection to the measuring transmitter

The connection cable of the SensoLyt® 650-7 Ex has free wire ends to be connected to a terminal strip.

Stratos Pro connection diagram

Wire color, sensor	Terminal, Stratos Pro	Terminal designation
Transparent	A	meas. el.
Green/yellow	B + C (with bridge)	ref. el. / SG
White	H	RTD (GND)
Brown	I	RTD



On the Stratos Pro measuring transmitter, the terminal strip for the sensor connection is behind the black cover with the "ESD shield" label. For more details please refer to the operating manual of the measuring transmitter.

3.2.3 Installation of the combination electrode



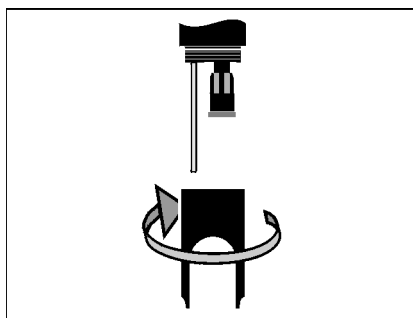
ATTENTION

The pressure resistance of the operable pH/ORP armature can be restricted by the pressure resistance of the electrode (see chapter 8 TECHNICAL DATA). When selecting the electrode make sure it is suitable for the intended pressure and temperature range.

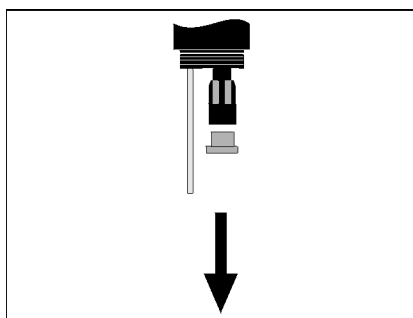


A KCl-filled plastic cap is mounted on the tip of the combination electrode to keep the electrode active during storage (or during longer pauses in measuring). The cap must be removed for measuring.

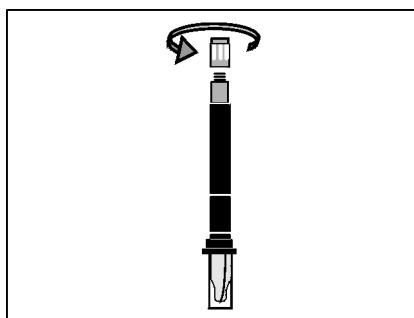
- 1 Unscrew the protective hood from the armature.



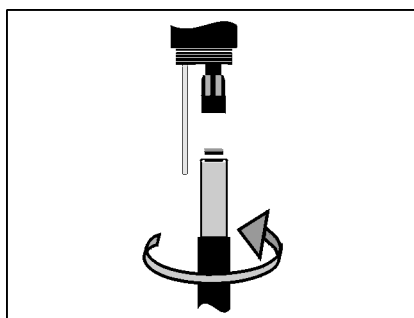
- 2 Pull off the blind plug from the plug head socket of the armature.



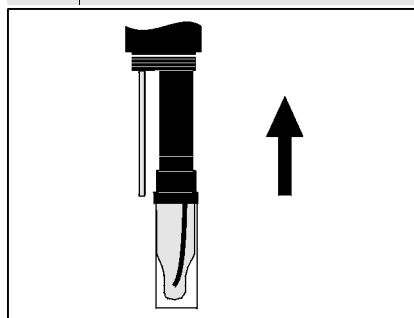
- 3 Screw the protective cap off the plug head connector of the electrode.




4 | Screw the electrode into the plug head socket of the armature.

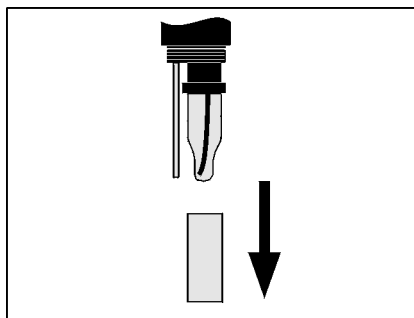


5 | Push the unit into the armature up to the stop.

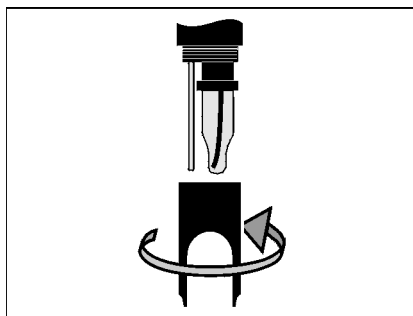


	ATTENTION
Push the connected electrode into the armature right up to the stop so that the connection is watertight.	

6 | For measuring, pull the KCl-filled plastic cap off the electrode.



7 | Screw the protective hood onto the armature.



- 8 Make the settings for the electrode on the measuring transmitter. Subsequently, calibrate the measuring system (see section 4.1 CALIBRATION).

3.3 Configuration of the measuring transmitter

The following values must be set in the CONF menu of the Stratos Pro measuring transmitter:

Menu item (CONF menu)	Value
Type of the temperature sensor	30 NTC



For details on operation, see the operating manual of the measuring transmitter.

4 Measurement / operation



Calibrate the measuring system after the initial commissioning and at regular intervals (depending on the application).

4.1 Calibration

Why calibrate?

During the operation of a pH electrode, the slope and asymmetry of the electrode changes with time. The calibration procedure determines the current slope and asymmetry of the electrode.

When to calibrate?

Calibrate before measuring and at regular intervals (depending on the application).

Calibration procedures

The available calibration procedures depend on the measuring transmitter used. The individual steps for the calibration are comprehensively described in the operating manual of the measuring transmitter.

4.2 Measuring

	⚠ WARNING
	Contact with the sample can lead to danger to the user! Depending on the type of sample, suitable protective measures must be taken (protective clothing, protective goggles, etc.).

Please pay attention to:



- the minimum immersion depth of the armature (> 40 mm)
- the measuring range of the electrode used (see operating manual of the electrode).



5 Maintenance and changing the electrode

5.1 General maintenance instructions

The SensoLyt® 650-7 Ex pH/ORP armature works maintenance-free. Please read the maintenance instructions in the relevant operating manual of the combination electrode.

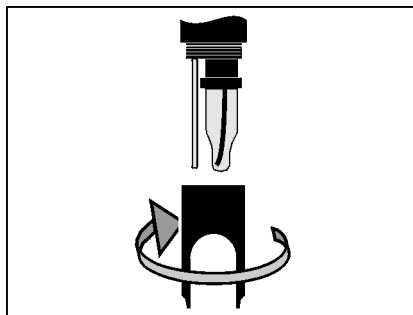
5.2 Replace the electrode

	 WARNING
	<p>Contact with the sample can lead to danger to the user! Depending on the type of sample, suitable protective measures must be taken (protective clothing, protective goggles, etc.).</p>

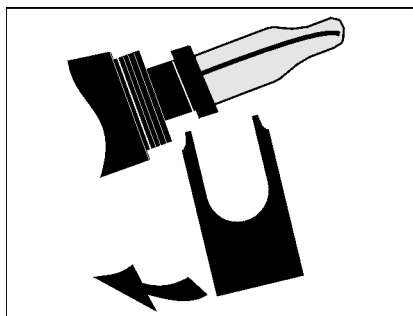
	 CAUTION
	<p>If the glass of the pH electrode breaks, there is a danger of cuts from the splinters of glass!</p>

If it is necessary to replace an electrode, proceed as follows:

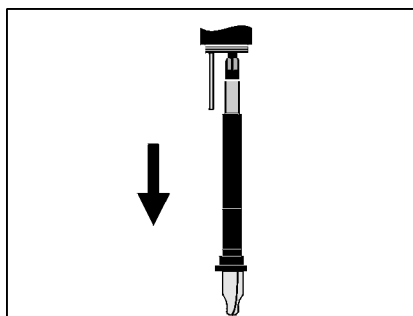
- 1 | Unscrew the protective hood from the armature.



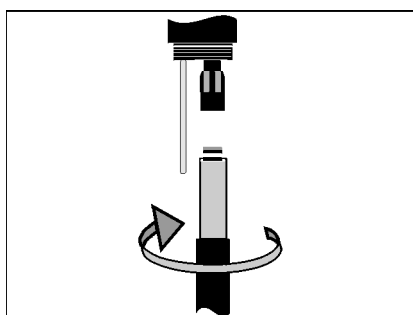
- 2 | Use the protective hood as a tool to lever out the electrode.



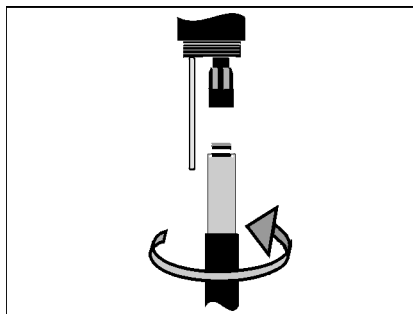
3 Carefully pull out the electrode until the plug head screwed fitting can be seen.



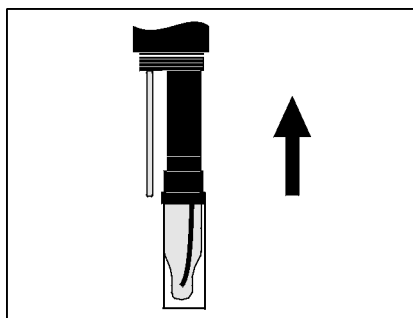
4 Unscrew the combination electrode from the plug head socket (for disposal, see section 5.4).




5 Screw in a new combination electrode.

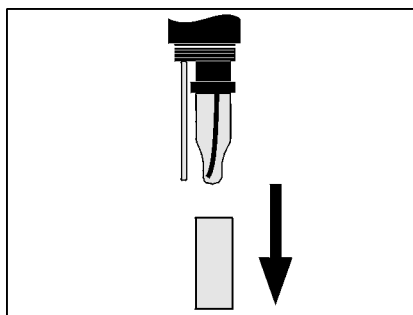


6 Push the unit into the armature up to the stop.

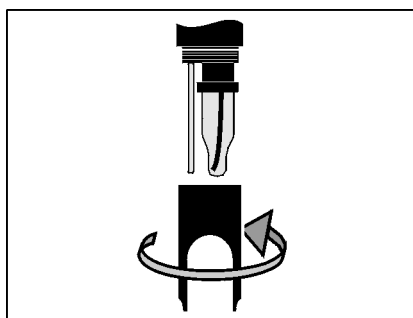


	ATTENTION
	<p>Push the connected electrode into the armature right up to the stop so that the connection is watertight.</p>

7 For measuring, pull the KCl-filled plastic cap off the combination electrode.



8 Screw the protective hood onto the armature.



9 Calibrate the measuring system (see section 4.1 CALIBRATION).

5.3 Cleaning

For normal operation (e.g. municipal wastewater), exterior cleaning and calibration are urgently recommended:

- if there is any pollution (according to visual check)
- if there is a suspicion of erroneous measured values
- if the measured value lies outside the range of precision required by the user during the function check.

Exterior cleaning

Contamination	Cleaning agents
Slurry and loosely adhering dirt or biological films	Soft cloth or soft sponge, warm tap water with detergent
Salt and / or lime deposits	Acetic acid (volume percentage = 20 %), soft cloth or soft sponge



Please also observe the instructions on the cleaning of the electrode given in the respective operating manual.


5.4 Disposal

Armature Combination electrodes

We recommend disposing of the armature as electronic refuse.

If no official regulations apply to the contrary, used and defective electrodes can be treated as household waste.

6 Replacement parts and accessories

	ATTENTION
	<p>The pressure resistance of the operable pH/ORP armature can be restricted by the pressure resistance of the electrode (see chapter 8 TECHNICAL DATA). When selecting the electrode make sure it is suitable for the intended pressure and temperature range.</p>

pH combination electrodes

Model	Order no.
SensoLyt® SEA EX	109 115EX
SensoLyt® GDA EX	109 116EX
SensoLyt® ECA EX	109 117EX
SensoLyt® SEA-HP EX	109 118EX

ORP combination electrode

Model	Order no.
SensoLyt® PtA	109 125 EX

Technical buffer solutions for pH calibration

Model (bottles of 1 liter)	pH value	Order no.
TEP 4	4,01	108 700
TEP 7	7,0	108 702
TEP 10	10,0	108 704



Information on further accessories is given in the WTW catalog and on the Internet.

7 What to do if ...

Measurement delivers no or wrong measured values

Cause	Remedy
– Armature not connected	– Check the connection to the terminal strip
– Electrode not connected or defective	– Check the electrode and electrode connection
– Watering cap still on the electrode	– Pull off the watering cap and calibrate
– No or wrong calibration performed	– Calibration
– Electrode contaminated	– Clean the electrode
– Liquid has penetrated the armature	– Armature defective, return to WTW
– Incorrect instrument setting	– Correct the instrument setting

System cannot be calibrated

Cause	Remedy
– Slope of the electrode too low	– Replace the electrode
– Asymmetry of the electrode too high	– Replace the electrode
– Armature is operated with ORP electrode	– Use pH electrode

8 Technical data

8.1 General features

Electrodes that can be integrated

See chapter 6 REPLACEMENT PARTS AND ACCESSORIES

Temperature sensor

Integrated NTC 30 (30 kW / 25 °C)

Dimensions

Length	311 mm (length of armoring including protective hood, without screwed cable gland)
Shaft diameter	40 mm

Weight

Approx. 800 g (including 7 m connection cable, without electrode)

Material

Protective hood	POM, conductive
Electrode receptacle	POM
Enclosure of the temperature sensor	Stainless steel 1.4571, coated
Protection ring	POM, conductive
Shaft	POM, conductive
Cable screw joint	POM
Cable coating	PUR

Connection cable

Length	7 m
Diameter	7 mm
Smallest allowed bend radius	Permanent bend: 150 mm Short time bend: 70 mm
Connection	Open wire ends with wire end sleeves to be connected to the measuring transmitter terminal strip

Applicable guidelines and norms

General safety	<ul style="list-style-type: none"> – EN 60079-0 – EN 60079-11 – EN 61010-1
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8.2 Explosion protection

Explosion protection characteristics

See document ba77057y (available in numerous languages).

8.3 Electrical data

Type of connection Cable with free stranded wire ends

Terminal assignment	Wire color	Assignment
	Brown	NTC
	White	NTC
	Transparent	pH/ORP connection of the electrode
	Green/yellow	Reference connection of the electrode


8.4 Measurement conditions

Temperature range	Measuring medium	0 °C ... + 40 °C
	Storage/transport	- 5 °C ... + 65 °C

Pressure resistance Armature with integrated electrode including connection cable

Max. allowed overpressure	10 ⁶ Pa (10 bar)
Type of protection	IP 68 (106 Pa or 10 bar)

The SensoLyt® 650-7 Ex meets the requirements according to article 3(3) of the directive 97/23/EC ("pressure equipment directive").

ATTENTION	
	<p>The pressure resistance of the operable pH/ORP armature can be restricted by the pressure resistance of the electrode (see chapter 8 TECHNICAL DATA). When selecting the electrode make sure it is suitable for the intended pressure and temperature range.</p>

Depth of immersion min. 40 mm; max. 7 m depth

Operating position Any

Fields of application Water and wastewater monitoring

8.5 Characteristic data on delivery

Temperature measurement	Sensor accuracy	± 0.3 K
	Response time	t ₉₉ (99 % of the final value display after) < 15 s

What can Xylem do for you?

We're a global team unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

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Service address:

Xylem Analytics Germany
Sales GmbH & Co. KG
WTW
Dr.-Karl-Slevogt-Str. 1
82362 Weilheim
Germany

Tel.: +49 881 183-325
Fax: +49 881 183-414
E-Mail wtw.rma@xylem.com
Internet: www.WTW.com



Xylem Analytics Germany GmbH
Dr.-Karl-Slevogt-Str. 1
82362 Weilheim
Germany