



Câmara Municipal de Lisboa

Direção Municipal do Ambiente, Estrutura Verde, Clima e Energia

CADERNO DE ENCARGOS

PA/345/DNAEUCE/2022

Procedimento por **Ajuste Direto (Regime Geral)** para a aquisição de um equipamento de bancada multifuncional para a medição de nitratos, oxigénio dissolvido e azoto amoniacal, com respetivos acessórios incorporados



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CAPÍTULO I
DISPOSIÇÕES GERAIS

Cláusula 1.ª

Objeto

- 1.- O presente caderno de encargos compreende as cláusulas a incluir no contrato a celebrar na sequência do procedimento pré-contratual que tem por objeto principal a aquisição de **um equipamento de bancada multifuncional para a medição de nitratos, oxigénio dissolvido e azoto amoniacal**, com respetivos acessórios incorporados (slots, elétrodos, cabos e soluções).

Cláusula 2.ª

Contrato

- 1.- O contrato é composto pelo respetivo clausulado contratual e os seus anexos.
- 2.- O contrato a celebrar integra ainda os seguintes elementos:
 - a) Os termos do suprimento dos erros e das omissões do caderno de encargos, identificados pelos concorrentes, desde que esses erros e omissões tenham sido expressamente aceites pelo órgão competente para a decisão de contratar;
 - b) Os esclarecimentos e as retificações relativos ao caderno de encargos;
 - c) O presente caderno de encargos;
 - d) A proposta adjudicada;
 - e) Os esclarecimentos sobre a proposta adjudicada prestados pelo adjudicatário.
- 3.- Em caso de divergência entre os documentos referidos no número anterior, a respetiva prevalência é determinada pela ordem pela qual aí são indicados.
- 4.- Em caso de divergência entre os documentos referidos no n.º 2 da presente cláusula e o clausulado do contrato e seus anexos, prevalecem os primeiros, salvo quanto aos ajustamentos propostos de acordo com o disposto no artigo 99.º do Código dos Contratos Públicos, aprovado pelo Decreto-Lei n.º 18/2008, de 29 de janeiro, na redação atualmente em vigor, doravante designado por CCP, e aceites pelo adjudicatário nos termos do disposto no artigo 101.º desse mesmo diploma legal.



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Cláusula 3.ª

Prazo

O contrato mantém-se em vigor pelo prazo de 60 (sessenta dias) sem prejuízo das obrigações acessórias que devam perdurar para além da cessação do contrato.

Cláusula 4.ª

Preço base

O valor máximo da aquisição (preço base) a observar para o contrato objeto do presente procedimento é de **8.109,00** EUR (Oito mil cento e nove euros), acrescido de IVA à taxa legal em vigor.

CAPÍTULO II

OBRIGAÇÕES CONTRATUAIS

Secção I

Obrigações do fornecedor

Subsecção I

Disposições gerais

Cláusula 5.ª

Obrigações principais do fornecedor

- 1.- Sem prejuízo de outras obrigações previstas na legislação aplicável, no presente caderno de encargos ou nas cláusulas contratuais, da celebração do contrato decorrem para o fornecedor as seguintes obrigações principais:
 - a) Cumprir as cláusulas do contrato e o estabelecido em todos os documentos que dele fazem parte integrante;
 - i) Obrigação de entrega dos bens identificados na sua proposta;
 - ii) Obrigação de garantia dos bens;
 - iii) Obrigação de continuidade de fabrico;
 - b) Atuar de acordo com a legislação portuguesa;
 - c) Cumprir pontualmente todas as disposições regulamentares dos documentos patenteados no procedimento e demais disposições normativas não expressamente referidas, que se encontrem em vigor e que se relacionem com a execução do contrato;



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- d) Respeitar, no que seja aplicável aos bens a entregar e não esteja em oposição com os documentos do contrato, as normas portuguesas, as especificações e documentos de homologação de organismos oficiais e as instruções de fabricantes ou de entidades detentoras de patentes;
 - e) A executar todos os trabalhos de harmonia com os regulamentos e normas em vigor, cumprindo todas as instruções dadas pela entidade pública adjudicante.
- 2.- O fornecedor deve assegurar que todos os bens e trabalhos a realizar serão fornecidos e executados de acordo com os mais altos padrões de qualidade, e, particularmente, nas relações com terceiros, acatará as normas de confidencialidade que lhe forem indicadas pela entidade pública adjudicante.
 - 3.- O fornecedor deverá inteirar-se dos locais objeto do presente procedimento e junto da entidade pública adjudicante, do volume e natureza dos trabalhos a executar, não sendo atendidas quaisquer reclamações baseadas no desconhecimento e na falta de previsão dos mesmos.
 - 4.- O fornecedor executará todos os trabalhos acessórios que, expressa ou explicitamente sejam exigidos, para atingir o objetivo do procedimento, cumprindo todas as instruções que, para tal fim, lhe sejam dadas pela entidade pública adjudicante.
 - 5.- A título acessório, o fornecedor fica ainda obrigado, designadamente, a recorrer a todos os meios humanos, materiais e tecnológicos que sejam necessários e adequados ao fornecimento dos bens, bem como ao estabelecimento do sistema de organização necessário à perfeita e completa execução das tarefas a seu cargo.

Cláusula 6.ª

Conformidade e operacionalidade dos bens

- 1.- O fornecedor obriga-se a entregar ao contraente público os bens objeto do contrato com as características, especificações e requisitos técnicos previstos no anexo 1. ao presente caderno de encargos, que dele faz parte integrante.
- 2.- Os bens objeto do contrato devem ser entregues em perfeitas condições de serem utilizados para os fins a que se destinam e dotados de todo o material de apoio necessário à sua entrada em funcionamento.
- 3.- É aplicável, com as necessárias adaptações, o disposto na lei que disciplina os aspetos relativos às vendas de bens de consumo e das garantias a elas relativas, no que respeita à conformidade dos bens.
- 4.- O fornecedor é responsável perante o contraente público, por qualquer defeito ou discrepância dos bens objeto do contrato que existam no momento em que os bens lhe são entregues.



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Cláusula 7.ª

Entrega dos bens objeto do contrato

- 1.- Os bens objeto do contrato devem ser entregues no Laboratório de Bromatologia e Águas, sito na Av. Cidade do Porto, S/N, 1700-111 Lisboa, no prazo de 30 (trinta) dias a contar da data da adjudicação.
- 2.- O fornecedor obriga-se a disponibilizar, simultaneamente com a entrega dos bens objeto do contrato, todos os documentos que sejam necessários para a boa e integral utilização ou funcionamento daqueles.
- 3.- Com a entrega dos bens objeto do contrato, ocorre a transferência da posse e da propriedade daqueles para o contraente público, bem como o risco de deterioração ou perecimento dos mesmos, sem prejuízo das obrigações de garantia que impendem sobre o fornecedor.
- 4.- Todas as despesas e custos com o transporte dos bens objeto do contrato e respetivos documentos para o local de entrega são da responsabilidade do fornecedor.

Cláusula 8.ª

Inspeção e testes

- 1.- Efetuada a entrega dos bens objeto do contrato, o contraente público, por si ou por intermédio de terceiro por ele designado, procede, no prazo de 30 (trinta) dias, à inspeção quantitativa e qualitativa dos mesmos, com vista a verificar, respetivamente, se os mesmos correspondem às quantidades estabelecidas no anexo 1. ao presente caderno de encargos e se reúnem as características, especificações e requisitos técnicos e operacionais definidos no anexo 1. ao presente caderno de encargos e na proposta adjudicada, bem como outros requisitos exigidos por lei.
- 2.- A inspeção qualitativa a que se refere o número anterior incide sobre o equipamento em si, (equipamento multifuncional de bancada, slots, elétrodos e cabos) sendo efetuada através dos testes que constam do anexo 1. ao presente caderno de encargos.
- 3.- Durante a fase de realização de testes, o fornecedor deve prestar ao contraente público toda a cooperação e esclarecimentos necessários, podendo fazer-se representar durante a realização daqueles, através de pessoas devidamente credenciadas para o efeito.
- 4.- Os encargos com a realização de testes, devidamente comprovados, são da responsabilidade do fornecedor.



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Cláusula 9.ª

Inoperacionalidades, defeitos e discrepâncias

- 1.- No caso dos testes previstos na cláusula anterior não comprovarem a total operacionalidade dos bens objeto do contrato, bem como a sua conformidade com as exigências legais, ou no caso de existirem defeitos ou discrepâncias com as características, especificações e requisitos técnicos definidos no anexo 1. ao presente caderno de encargos, o contraente público deve disso informar, por escrito, o fornecedor.
- 2.- No caso previsto no número anterior, o fornecedor deve proceder, à sua custa e no prazo razoável que for determinado pelo contraente público, às reparações ou substituições necessárias para garantir a operacionalidade dos bens e o cumprimento das exigências legais e das características, especificações e requisitos técnicos exigidos.
- 3.- Após a realização das reparações ou substituições necessárias pelo fornecedor, no prazo respetivo, o contraente público procede à realização de novos testes de aceitação, nos termos da cláusula anterior.

Cláusula 10.ª

Aceitação dos bens

- 1.- Caso os testes a que se referem a cláusula 8.ª comprovem a total operacionalidade dos bens objeto do contrato, bem como a sua conformidade com as exigências legais, características, especificações e requisitos técnicos definidos no anexo 1. ao presente caderno de encargos, deve ser emitido, no prazo máximo de 30 (trinta) dias a contar do final dos testes, um auto de receção, assinado pelos representantes do fornecedor e da entidade pública adjudicante.
- 2.- Com a assinatura do auto a que se refere o número anterior, ocorre a transferência da posse e da propriedade dos bens objeto do contrato para a entidade pública adjudicante, bem como o risco de deterioração ou perecimento dos mesmos, sem prejuízo das obrigações de garantia que impendem sobre o fornecedor.
- 3.- A assinatura do auto a que se refere o n.º 1 da presente cláusula não implica a aceitação de eventuais defeitos ou discrepâncias dos bens objeto do contrato com as exigências legais, características, especificações e requisitos técnicos previstos no anexo 1. ao presente caderno de encargos.

Cláusula 11.ª

Garantia técnica

- 1.- Nos termos da presente cláusula e da lei que disciplina os aspetos relativos à venda de bens de consumo e das garantias a ela relativas, o fornecedor garante os bens objeto do



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contrato, pelo prazo de dois anos a contar da data de assinatura do auto de receção, contra quaisquer defeitos ou discrepâncias com as exigências legais e com características, especificações e requisitos técnicos definidos no anexo 1. ao presente caderno de encargos, que se revelem a partir da respetiva aceitação do bem.

2.- A garantia prevista no número anterior abrange:

- a) O fornecimento, a montagem ou integração de quaisquer peças ou componentes em falta;
- b) A desmontagem de peças, componentes ou bens defeituosos ou discrepantes;
- c) A reparação ou substituição das peças, componentes ou bens defeituosos ou discrepantes;
- d) O fornecimento, a montagem ou instalação das peças, componentes ou bens reparados ou substituídos;
- e) O transporte do bem ou das peças ou componentes defeituosos ou discrepantes para o local da sua reparação ou substituição e a devolução daqueles bens ou a entrega das peças ou componentes em falta, reparados ou substituídos;
- f) A deslocação ao local da instalação ou de entrega;
- g) A mão-de-obra.

3.- No prazo máximo de dois meses a contar da data em que o contraente público tenha detetado qualquer defeito ou discrepância, este deve notificar o fornecedor, para efeitos da respetiva reparação.

4.- A reparação ou substituição previstas na presente cláusula devem ser realizadas dentro de um prazo razoável fixado pelo contraente público e sem grave inconveniente para este último, tendo em conta a natureza do bem e o fim a que o mesmo se destina.

Cláusula 12.ª

Garantia da continuidade de fabrico

O fornecedor deve assegurar a continuidade de fabrico e do fornecimento de todas as peças, componentes ou equipamentos que integram os bens objeto do contrato pelo prazo estimado de vida útil dos bens, de acordo com as regras de amortização contabilística aplicáveis, a contar da assinatura do auto de receção respetivo.



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Subsecção II
Dever de sigilo

Cláusula 13.ª
Objeto do dever de sigilo

- 1.- O fornecedor deve guardar sigilo sobre toda a informação e documentação técnica e não técnica, comercial ou outra, relativa à entidade pública adjudicante, de que possa ter conhecimento em virtude da execução do contrato, salvo se prévia e expressamente autorizado pela entidade pública adjudicante.
- 2.- A informação e a documentação cobertas pelo dever de sigilo não podem ser transmitidas a terceiros, nem objeto de qualquer uso ou modo de aproveitamento que não o destinado direta e exclusivamente à execução do contrato.
- 3.- Exclui-se do dever de sigilo previsto a informação e a documentação que fossem comprovadamente do domínio público à data da respetiva obtenção pelo fornecedor ou que este seja legalmente obrigado a revelar, por força da lei, de processo judicial ou a pedido de autoridades reguladoras ou outras entidades administrativas competentes.

Cláusula 14.ª
Prazo do dever de sigilo

O dever de sigilo mantém-se em vigor até ao termo do prazo de 2 anos a contar do cumprimento ou cessação, por qualquer causa, do contrato, sem prejuízo da sujeição subsequente a quaisquer deveres legais relativos, designadamente, à proteção de segredos comerciais ou da credibilidade, do prestígio ou da confiança devidos às pessoas coletivas.

Secção II
Obrigações da entidade pública adjudicante

Cláusula 15.ª
Preço contratual

- 1.- Pelo fornecimento dos bens objeto do contrato, bem como pelo cumprimento das demais obrigações constantes do presente caderno de encargos a entidade pública adjudicante deve pagar ao fornecedor, o preço constante da proposta adjudicada, que não poderá ser superior, sob pena de exclusão, ao preço máximo fixado no presente caderno de encargos acrescido de IVA à taxa legal em vigor, se este for legalmente devido.
- 2.- O preço referido no número anterior inclui todos os custos, encargos e despesas cuja responsabilidade não esteja expressamente atribuída ao contraente público,



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nomeadamente os relativos ao transporte dos bens objeto do contrato para o respetivo local de entrega, incluindo as despesas de alojamento, alimentação e deslocação de meios humanos, despesas de aquisição, transporte, armazenamento e manutenção de meios materiais bem como quaisquer encargos decorrentes da utilização de marcas registadas, patentes ou licenças.

3.- O preço a que se refere o n.º 1 da presente cláusula é pago numa única prestação.

Cláusula 16.ª

Faturas e condições de pagamento

1.- As quantias devidas pela entidade adjudicante, nos termos da cláusula anterior, devem ser pagas no prazo de 30 dias após a receção pela entidade pública adjudicante das respetivas faturas, as quais só podem ser emitidas após o vencimento da obrigação respetiva.

2.- Nos termos do disposto no Decreto-Lei n.º 123/2018, de 28 de dezembro, e com o Decreto-Lei n.º 111-B/2017, de 31 de agosto, revistos pelo Decreto-Lei 14-A/2020, de 7 de abril, é obrigatório enviar os documentos em formato eletrónico (EDI) para as entidades da administração pública, no âmbito dos contratos públicos.

3.- O Município de Lisboa aderiu ao Portal da FE-AP para a receção de documentos em formato eletrónico (EDI), sistema suportado pela eSPap – Entidade de Serviços Partilhados da Administração Pública, I.P., pelo que as entidades, ao iniciarem o processo de onboarding à solução FE-AP, devem:

3.1.- Consultar a informação sobre a fatura eletrónica

<https://www.espap.gov.pt/spfin/Paginas/spfin.aspx#maintab5>;

3.2.- Consultar a informação específica do processo de onboarding dos fornecedores

<https://www.espap.gov.pt/spfin/onboarding/Paginas/onboarding%20de%20Fornecedores.aspx#maintab1>

3.3.- Preencher o formulário de adesão: https://pt.surveymonkey.com/r/FE-AP_CIOUS

4.- **A fatura deve incluir obrigatoriamente a menção ao Número de Compromisso**, que será comunicado na notificação de adjudicação, sob pena de devolução da mesma.

5.- Para os efeitos do número anterior, a obrigação considera-se vencida com a assinatura do auto de receção respetivo.

6.- Em caso de discordância por parte da entidade pública adjudicante, quanto aos valores indicados nas faturas, deve esta comunicar ao prestador de serviços, por escrito, os respetivos fundamentos, ficando o prestador de serviços obrigado a prestar os esclarecimentos necessários ou proceder à emissão de nova fatura corrigida.



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7.- Observado o disposto no n.º 1 da presente cláusula, desde que devidamente emitidas, registadas e conferidas, as faturas são pagas através de transferência bancária.

8.- A inobservância dos prazos de pagamento previstos no n.º 1 da presente cláusula confere ao adjudicatário o direito ao pagamento dos correspondentes juros moratórios, sem prejuízo dos demais direitos que legalmente lhe assistam.

CAPÍTULO III

PENALIDADES CONTRATUAIS E RESOLUÇÃO

Cláusula 17.^a

Penalidades contratuais

- 1.- Pelo incumprimento de obrigações emergentes do contrato, nomeadamente pelo incumprimento de data e prazos de entrega a entidade pública adjudicante pode exigir do fornecedor o pagamento de uma pena pecuniária, de montante a fixar em função da gravidade do incumprimento, nos seguintes termos:
 - a) Pelo incumprimento das datas e prazos fixados para a entrega dos bens pelo fornecedor e por causa imputável ao mesmo, uma penalidade por cada dia de atraso, em valor correspondente a 1% do preço contratual, sem prejuízo de o contrato poder prever um valor mais elevado, até ao dobro daquele valor;
- 2.- Em caso de resolução do contrato por incumprimento do fornecedor, a entidade pública adjudicante pode exigir ao fornecedor uma pena pecuniária que, no limite, poderá ser igual a 20% do preço final do contrato.
- 3.- Ao valor da pena pecuniária prevista no número anterior são deduzidas as importâncias pagas pelo fornecedor, relativamente aos bens e serviços cujo atraso na respetiva conclusão tenha determinado a resolução do contrato.
- 4.- Na determinação da gravidade do incumprimento, a entidade pública adjudicante tem em conta, nomeadamente, a duração da infração, a sua eventual reiteração, o grau de culpa do fornecedor e as consequências do incumprimento.
- 5.- A entidade pública adjudicante pode compensar os pagamentos devidos ao abrigo do contrato com as penas pecuniárias devidas nos termos da presente cláusula.
- 6.- As penas pecuniárias previstas na presente cláusula não obstam a que a entidade pública adjudicante exija uma indemnização pelo dano excedente.
- 7.- As importâncias resultantes da aplicação das penalidades previstas serão deduzidas no primeiro pagamento que se seguir à sua aprovação. Caso o valor da penalidade seja



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superior ao do pagamento, a parte restante será deduzida na prestação imediata e assim sucessivamente.

- 8.- As penalidades previstas na presente cláusula terão como limite máximo global 20% (vinte por cento) do preço final do contrato.

Cláusula 18.^a

Força maior

- 1.- Não podem ser impostas penalidades ao fornecedor, nem é havida como incumprimento, a não realização pontual das prestações contratuais a cargo de qualquer das partes que resulte de caso de força maior, entendendo-se como tal as circunstâncias que impossibilitem a respetiva realização, alheias à vontade da parte afetada, que ela não pudesse conhecer ou prever à data da celebração do contrato e cujos efeitos não lhe fosse razoavelmente exigível contornar ou evitar.
- 2.- Podem constituir força maior, se verificarem os requisitos do número anterior, designadamente, tremores de terra, inundações, incêndios, epidemias, sabotagens, greves, embargos ou bloqueios internacionais, atos de guerra ou terrorismo, motins e determinações governamentais ou administrativas injuntivas.
- 3.- Não constituem força maior, designadamente:
 - a) Circunstâncias que não constituam força maior para os subcontratados do fornecedor, na parte em que intervenham;
 - b) Greves ou conflitos laborais limitados às sociedades do fornecedor ou a grupos de sociedades em que este se integre, bem como a sociedades ou grupos de sociedades dos seus subcontratados;
 - c) Determinações governamentais, administrativas, ou judiciais de natureza sancionatória ou de outra forma resultantes do incumprimento pelo fornecedor de deveres ou ónus que sobre ele recaiam;
 - d) Manifestações populares devidas ao incumprimento pelo fornecedor de normas legais;
 - e) Incêndios ou inundações com origem nas instalações do fornecedor cuja causa, propagação ou proporções se devam a culpa ou negligência sua ou ao incumprimento de normas de segurança;
 - f) Avarias nos sistemas informáticos ou mecânicos do fornecedor não devidas a sabotagem;
 - g) Eventos que estejam ou devam estar cobertos por seguros.



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- 4.- A ocorrência de circunstâncias que possam consubstanciar casos de força maior deve ser imediatamente comunicada à outra parte.
- 5.- A força maior determina a prorrogação dos prazos de cumprimento das obrigações contratuais afetadas pelo período de tempo comprovadamente correspondente ao impedimento resultante da força maior.

Cláusula 19.ª

Resolução por parte da entidade pública adjudicante

- 1.- Sem prejuízo de outros fundamentos de resolução do contrato previstos na lei, a entidade pública adjudicante pode resolver o contrato, a título sancionatório, sem formalidade, no caso de o fornecedor violar de forma grave ou reiterada qualquer das obrigações que lhe incumbem, designadamente nos seguintes casos:
 - a) Deixar por qualquer forma, de dar cumprimento às condições previstas por este caderno de encargos e demais legislação vigente;
 - b) Pelo atraso, total ou parcial, na entrega dos bens objeto do contrato superior 3 meses ou declaração escrita do fornecedor de que o atraso respetivo excederá esse prazo;
- 2.- O direito de resolução referido no número anterior exerce-se mediante declaração enviada ao fornecedor e não determina a repetição das prestações já realizadas, a menos que tal seja determinado pela entidade pública adjudicante.

Cláusula 20.ª

Resolução por parte do fornecedor

- 1.- Sem prejuízo de outros fundamentos de resolução previstos na lei, o fornecedor pode resolver o contrato quando:
 - a) Qualquer montante que lhe seja devido esteja em dívida há mais de 120 dias.
- 2.- O direito de resolução é exercido por mediante recurso a arbitragem, nos termos da cláusula 27ª.
- 3.- Nos casos previstos na alínea a) do n.º 1, o direito de resolução pode ser exercido mediante declaração enviada à entidade pública adjudicante que produz efeitos 30 dias após a receção dessa declaração, salvo se este último cumprir as obrigações em atraso nesse prazo, acrescidas dos juros de mora a que houver lugar.
- 4.- A resolução do contrato nos termos dos números anteriores não determina a repetição das prestações já realizadas pelo fornecedor, cessando, porém, todas as obrigações deste ao abrigo do contrato, com exceção daquelas a que se refere o artigo 444.º do CCP.



Câmara Municipal de Lisboa
Direção Municipal do Ambiente, Estrutura Verde, Clima e Energia

CAPÍTULO IV
CAUÇÃO E SEGUROS

Cláusula 21.ª

Caução para garantir o cumprimento de obrigações

Nos termos do n.º 2 do artigo 88.º do CCP e uma vez que o preço contratual é inferior a 500.000,00 EUR, não se exige a prestação de caução por parte do fornecedor, nem se procede a título de garantia à retenção de uma percentagem do pagamento dos valores a efetuar.

Cláusula 22.ª

Seguros

- 1.- É da responsabilidade do fornecedor a cobertura, através de contratos de seguro, dos seguintes riscos:
 - a) Recursos humanos;
 - b) Viaturas utilizadas para a deslocação dos recursos humanos em cumprimento do contrato.
- 2.- A entidade pública adjudicante pode, sempre que entender conveniente, exigir prova da documentação da celebração dos contratos de seguro referidos no número anterior, devendo o fornecedor fornecê-la no prazo que a entidade pública adjudicante fixar para o efeito.

CAPÍTULO V
RESOLUÇÃO DE LITÍGIOS

Cláusula 23.ª

Arbitragem

- 1.- Quaisquer litígios relativos, designadamente, à interpretação, execução, incumprimento, invalidade ou resolução do contrato devem ser dirimidos por tribunal arbitral, devendo, nesse caso, ser observadas as seguintes regras:
 - a) Sem prejuízo do disposto nas alíneas b) a d) da presente cláusula, a arbitragem far-se-á de acordo com as regras processuais propostas pelos árbitros;
 - b) O Tribunal Arbitral tem sede em Lisboa e é composto por três árbitros;
 - c) O contraente público designa um árbitro, o fornecedor designa um outro árbitro e o terceiro, que preside, é cooptado pelos dois designados;



Câmara Municipal de Lisboa
Direção Municipal do Ambiente, Estrutura Verde, Clima e Energia

- d) No caso de alguma das partes não designar árbitro ou no caso dos árbitros designados pelas partes não acordarem na escolha do árbitro-presidente, deve este ser designado pelo Presidente do Tribunal Central Administrativo territorialmente competente.

2.- O tribunal arbitral decide segundo o direito constituído e da sua decisão não cabe recurso.

CAPÍTULO VI
DISPOSIÇÕES FINAIS

Cláusula 24.ª

Subcontratação e cessão da posição contratual

A subcontratação pelo fornecedor e a cessão da respetiva posição contratual depende, em qualquer causa, da autorização escrita da entidade pública adjudicante.

Cláusula 25.ª

Comunicações e notificações

- 1.- Sem prejuízo de poderem ser acordadas outras regras quanto às notificações e comunicações entre as partes do contrato, estas devem ser dirigidas, nos termos do CCP, para o domicílio ou sede contratual das partes, identificados no contrato.
- 2.- Qualquer alteração das informações de contato constantes do contrato deve ser comunicada à outra parte.

Cláusula 26.ª

Gestor do contrato

Nos termos dos artigos 290.º-A e 96.º, n.º 1, i) do CCP, a entidade pública adjudicante nomeará um gestor do contrato que terá a função de acompanhar permanentemente a execução deste.

Cláusula 27.ª

Contagem dos prazos

À contagem dos prazos, durante a execução do contrato, serão aplicáveis as normas contidas no artigo 471.º do CCP, sendo estes contínuos, correndo em sábados, domingos e dias feriados.

Cláusula 28.ª

Legislação aplicável

O contrato é regulado pela legislação portuguesa.

ANEXO 1

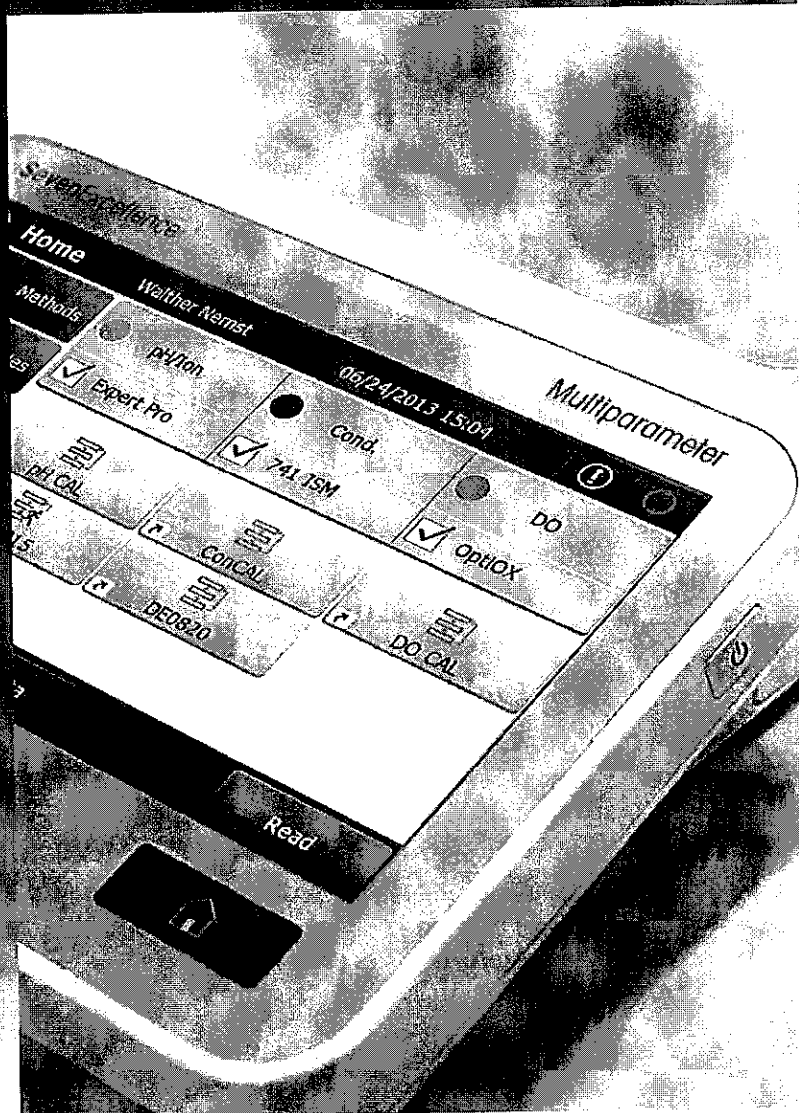
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ENCARGOS

SevenExcellence™



SevenExcellence™

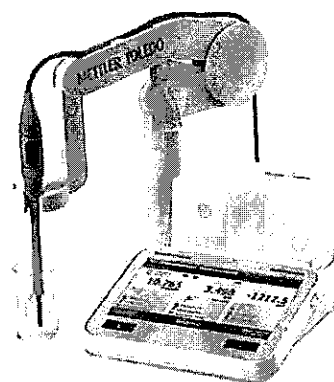
pH, ISFET

Conductivity

ORP/Redox

Ion Concentration

Dissolved Oxygen



Excel in the Lab with SevenExcellence™

Unmatched pH Performance

METTLER TOLEDO

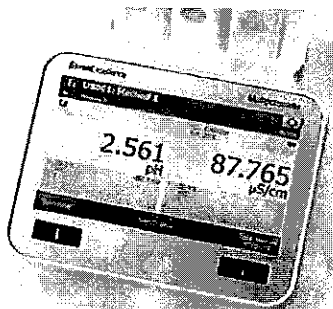
Improved Lab Work from the Start

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.

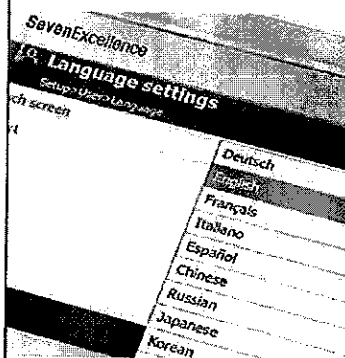
The large clear color display and the state-of-the-art touch screen operation make working with this instrument particularly enjoyable. The instrument's operation has been designed to support your workflow in the lab. The instrument speaks your language, making the selection of the right menu settings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

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 7 inch 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!

OneClick™ methods – quick and revolutionary



Start your own method, which is a sequence of analyses steps, with a single click. Using methods makes sure that your particular analysis is always performed with identical settings.



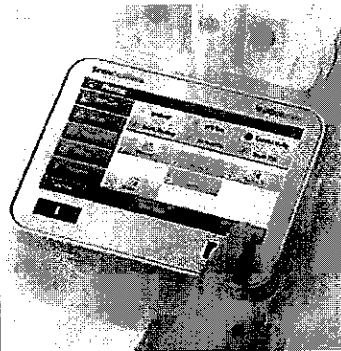
Discovery of PCR (Polymerase Chain Reaction) has made amplification of DNA sequences a simple and convenient standard technique. In all life science industries, pH plays a crucial role when making buffers or culture media.

Perfect ergonomics and high productivity with uPlace™



uPlace™: the electrode arm with perfect vertical movement can be operated using one hand only. 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.

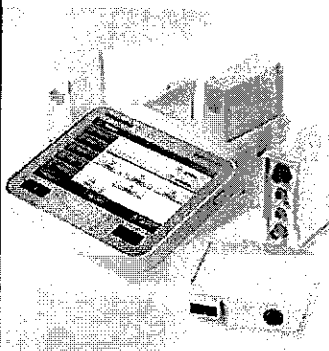
Flexibility in all Respects

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.

Through methods and direct measurement, the instrument provides two completely different types of analyses and 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

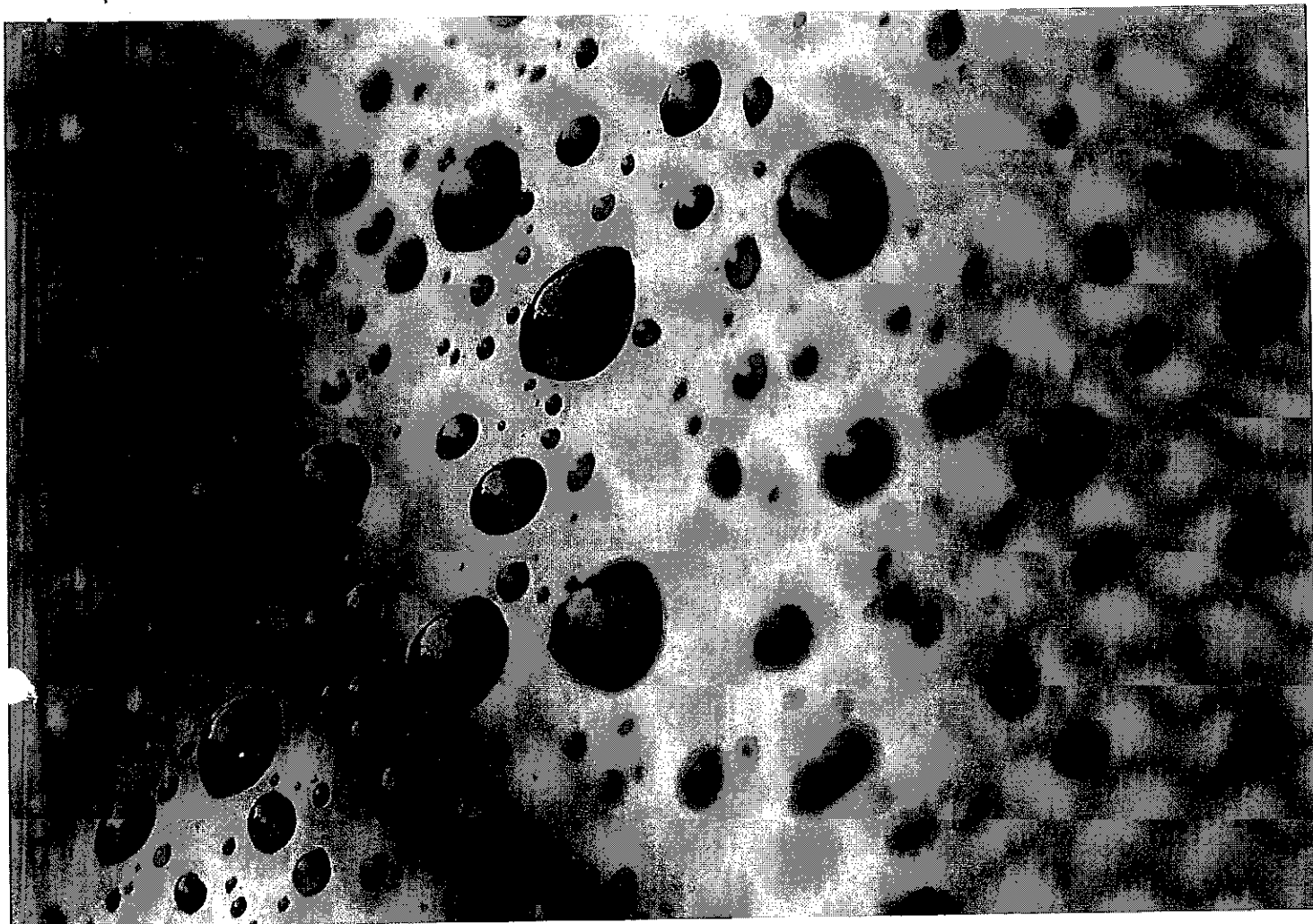


SevenExcellence has USB, Ethernet and RS232 interfaces, allowing the connection of a barcode reader, Rondolino sample changer, USB stick, network and METTLER TOLEDO printers and a PC with LabX® direct software.

Flexible and personalized buffer choices



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.



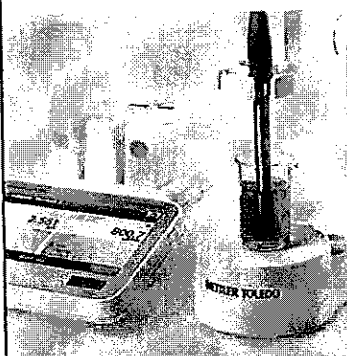
The discovery of the protective cooling technique has increased the lifetime of products, because it protects the core material from exposure to outside elements. The correct pH value of the final product helps maximize the protective effect of the coating.

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



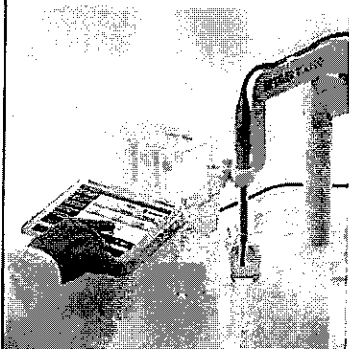
The optional uMix™ magnetic stirrer from METTLER TOLEDO provides an extra degree of flexibility for methods. Stirring can be setup individually for measurement or waiting steps in your method and the stir speed adjusted to reflect the sample's vessel size and viscosity.

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 processes. Its ingenious package makes the instrument suitable for routine tasks as well as professional measurements under stringent GLP conditions.

The instrument's 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.

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

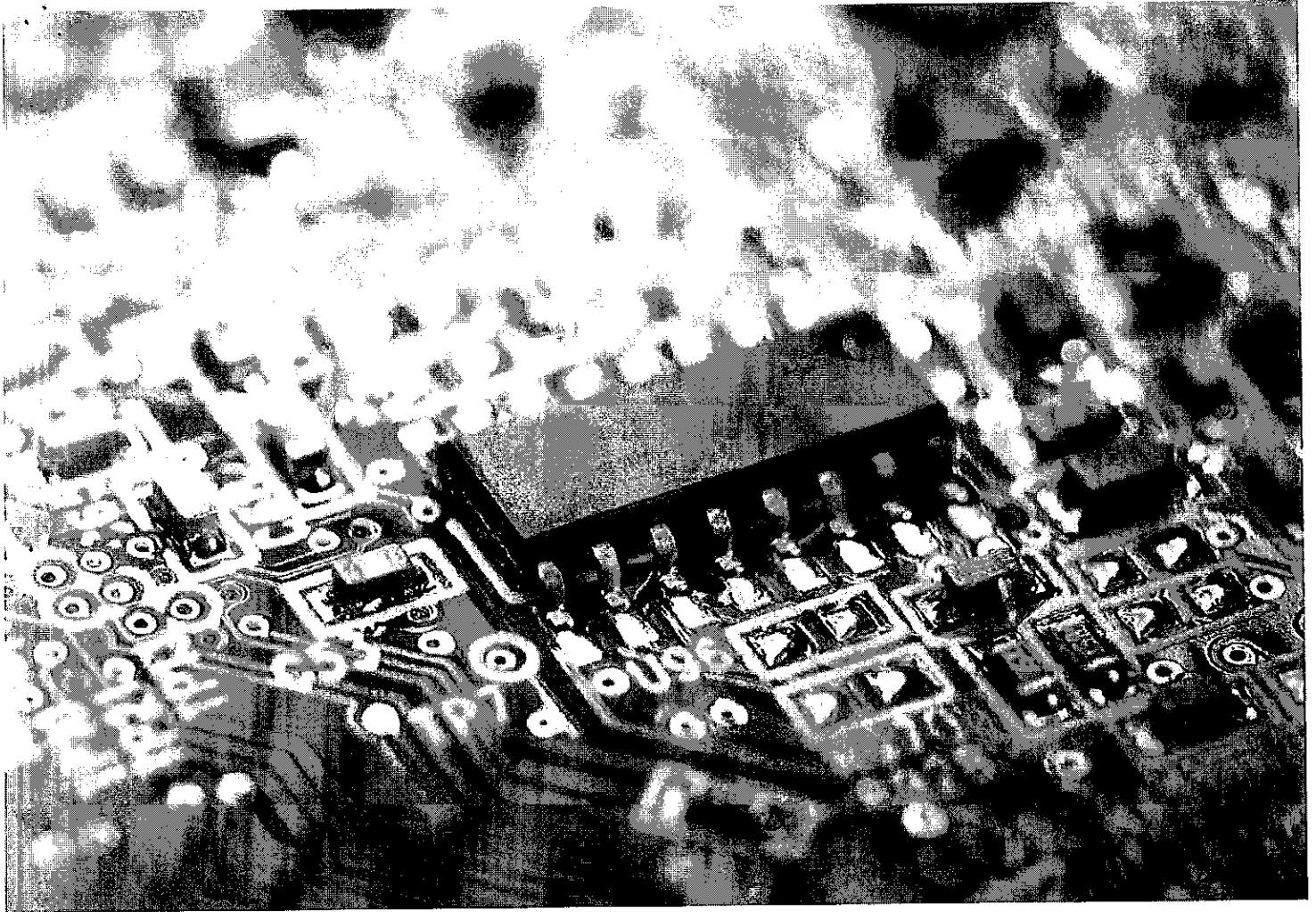


ISM® sensors are automatically identified by the instrument, preventing the use of the wrong sensor ID by mistake. Furthermore, calibration data is stored on the sensor and upon connection it is automatically transferred to the instrument for further use.

Professional calibration makes calibrations so easy

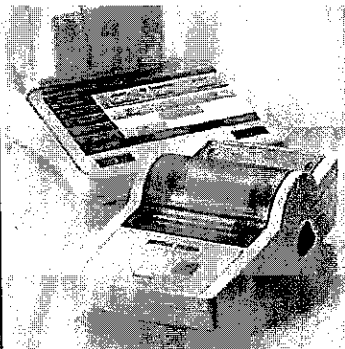


The instrument provides calibration support. Methods with a fixed calibration sequence, automatic evaluation of the calibration results with optional rejection and monitoring of the sensor's age and calibration interval are all available. Automatic calibration with the Rondolino sample changer is also possible!



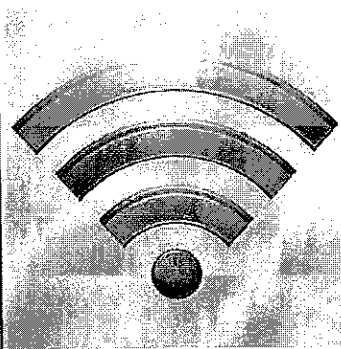
The invention and subsequent rapid development of electronics has enhanced flexibility and performance in all areas of daily life. To ensure the quality of the ultra-pure water utilized during the production of micro-electronic chips, measuring conductivity is vital.

**A wealth of GLP support –
leave 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.

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.

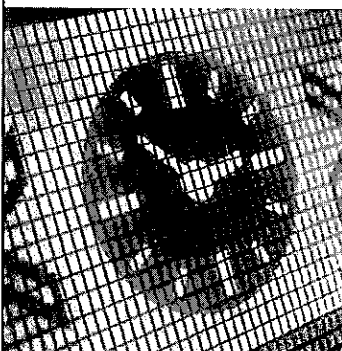
METTLER TOLEDO also offers professional installation, qualification and calibration services. These services do not only guarantee accurate and precise measurements but also leave your mind worry-free when it comes to possible compliance issues during quality audits.

Sophisticated user management



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!

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 then notifies you.

Fingerprint reader for secure access

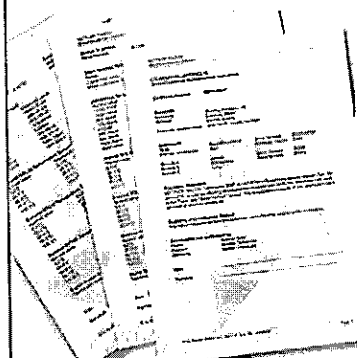


In addition to typing a password, the instrument also supports the LogStraight™ external fingerprint reader. This not only offers a convenient login solution, but also provides an extra degree of security!



Medicine has become much more secure through the discovery of tablets, as they allow administration of the right drug dose in the right intervals. To comply with internal and international regulations, checking the pH value of drugs is crucial.

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.

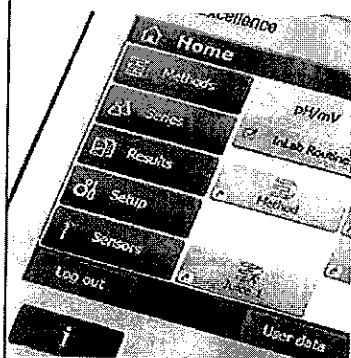
Efficient Workflow Support

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 measurements or an analysis series with an optional autosampler. Once setup, data archiving is a standard procedure that will take place automatically following each analysis.

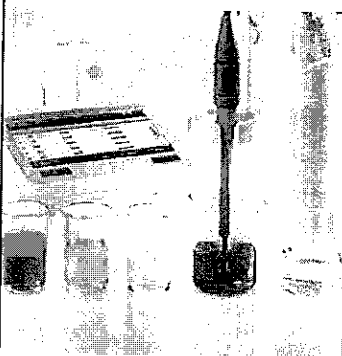
With SevenExcellence the complete cycle from data entry to data archiving is kept as simple as possible. On its own, the instrument offers great functionality, but increased efficiency and workflow optimization can be achieved by connecting peripherals.

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 one after the other. 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

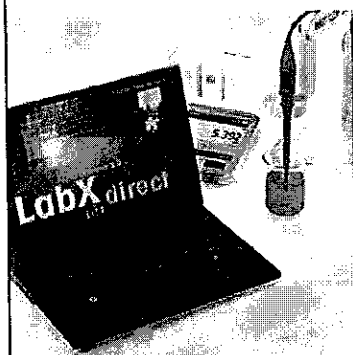


The instrument's touch screen operation makes the entry of text, e.g. sample ID's, possible in a quick and convenient way. To even further increase efficiency, you can use a USB barcode reader.



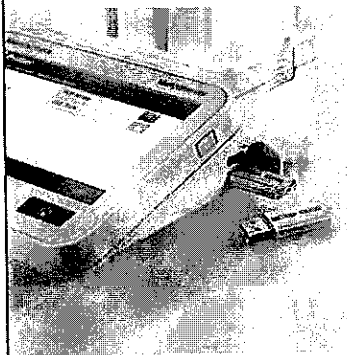
In liquid chromatography reliable results are only given if the pH value of the mobile phase lies within a defined range. To guarantee a seamless process when preparing the eluent, a quick and precise pH measurement is key.

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 who wish 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.

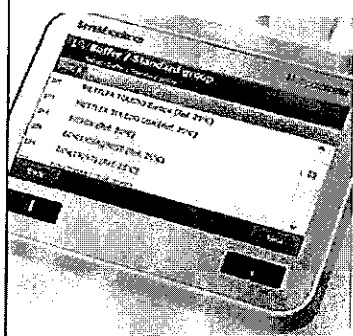
SevenExcellence™ pH/mV

Professional and Flexible

The 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 offer 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



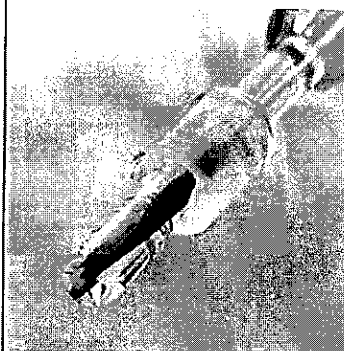
Choose from one of eight pre-defined calibration buffers groups or easily create your own. With the Pick-and-Mix™ feature you can conveniently combine pH buffers from different groups. After calibration the sensor icon shows you the quality of the calibration at a glance.

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
pH	-2.000 ... 20.000	0.001 / 0.01 / 0.1	± 0.002
mV	-2000.0 ... 2000.0	0.1 / 1	± 0.1
ISFET pH	0.000 ... 14.000	0.001 / 0.01 / 0.1	± 0.05
Temperature	-30.0 ... 130.0 °C	0.1 °C	± 0.1 °C
Calibration	Mox. 5 points, 8 pre-defined and 20 user-defined buffer groups		
Methods	17 pre-defined and 60 user defined methods		
System	Date/time, PIN-protection, user management, 10 languages		
Data storage / Data export	At least 20 000 data points, 250 analyses / USB-Slick, LabX® direct PC software		

Order info	Description and sensors	Order no.
S400-Basic (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
S400-Micro (kit)	As S400-Kit but with InLab® Ultra-Micro instead of InLab® Expert Pro-ISM.	30092982
S400-uMix (kit)	As S400-Kit, also including magnetic stirrer uMix™.	30092983

Triple channel Instrument with pH/Ion, DO/BOD and conductivity expansion units

S975-uMix (kit)	Includes instrument, pH/Ion, DO/BOD and conductivity 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. Also includes the uMix™ magnetic stirrer. Kit includes the following sensors: InLab® Expert Pro-ISM, InLab® 731-ISM and InLab® OptiOx.	30092989
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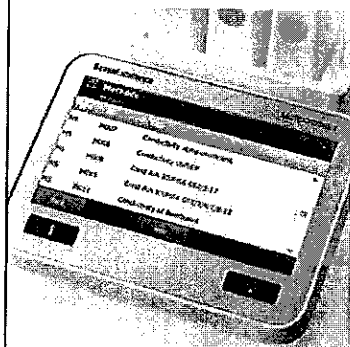
SevenExcellence™ Conductivity

Professional and Contemporary

The 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.

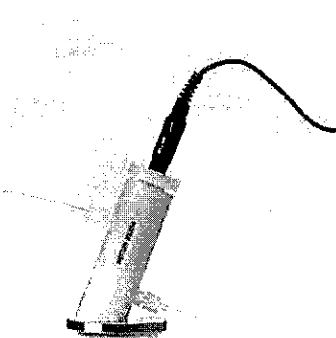
The instrument supports your workflow, making conductivity measurements obstacle-free. For special applications such as USP/EP and conductivity ash it guides you through the measurement steps and notifies you when a measurement is out of range.

Methods – a perfect match for conductivity



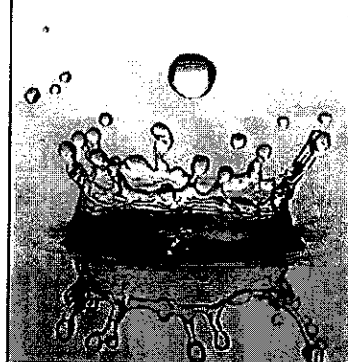
In addition to being more secure, more reproducible due to identical settings and more convenient, methods also enable you to run special applications for conductivity. These include USP/EP measurement of pure water with limits monitoring and Conductivity Ash measurements according to two ICUMSA regulations.

Pure water – high accuracy for low conductivity

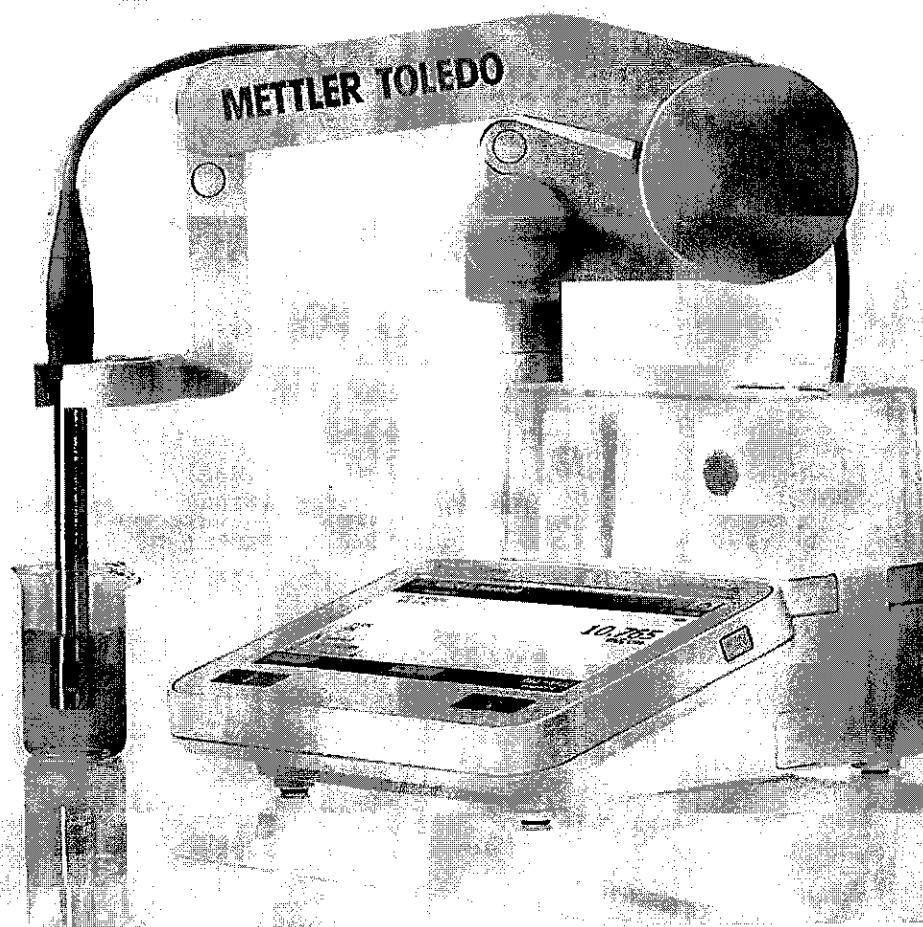


Low conductivity measurement requires special attention. When measuring pure or ultra-pure water there are several sources of potential error such as carbon dioxide from air and temperature inaccuracy. Our digital conductivity cell InLab® Trace, with high temperature accuracy and optional flow through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



Description and order information for SevenExcellence™ Conductivity

	Measuring range	Resolution	Accuracy
Conductivity*	0.001 µS/cm ... 2000 mS/cm	0.001 ... 1	± 0.5%
Temperature**	-30.0 ... 130.0 °C	0.1 °C	± 0.1 °C

Calibration	13 pre-defined and 20 user-defined standards
Temperature compensation	Linear, non-linear, off, pure-water; reference temperature 20 °C or 25 °C
Methods	17 pre-defined and 60 user defined methods
System	Date/time, PIN-protection, user management, 10 languages
Data storage / Data export	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 µS/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 17 and 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 µS/cm and 12.88 mS/cm calibration sachets.	30046254

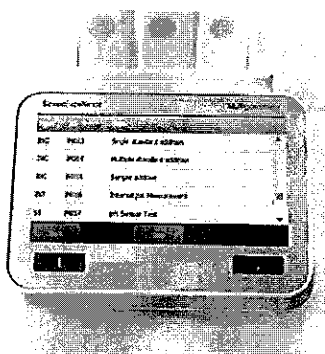
SevenExcellence™ pH/Ion

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.

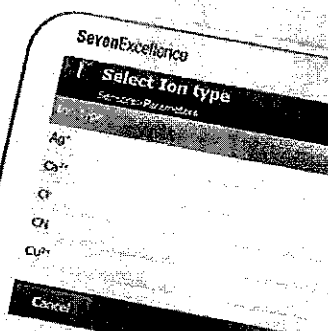
The wealth of measurement possibilities is also reflected in the large collection of compatible pH, ORP and Ion sensors available. You can also connect an external temperature sensor as well as a separate reference electrode if your special applications require it.

Incremental methods



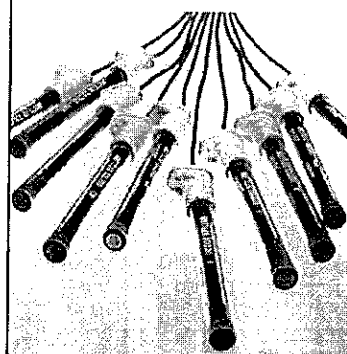
Special methods for the most common incremental ion measurement techniques are included, such as various standard addition/subtraction and sample addition/subtraction methods. This gives you a flexible and contemporary tool kit for professional ion measurements!

Full ion support

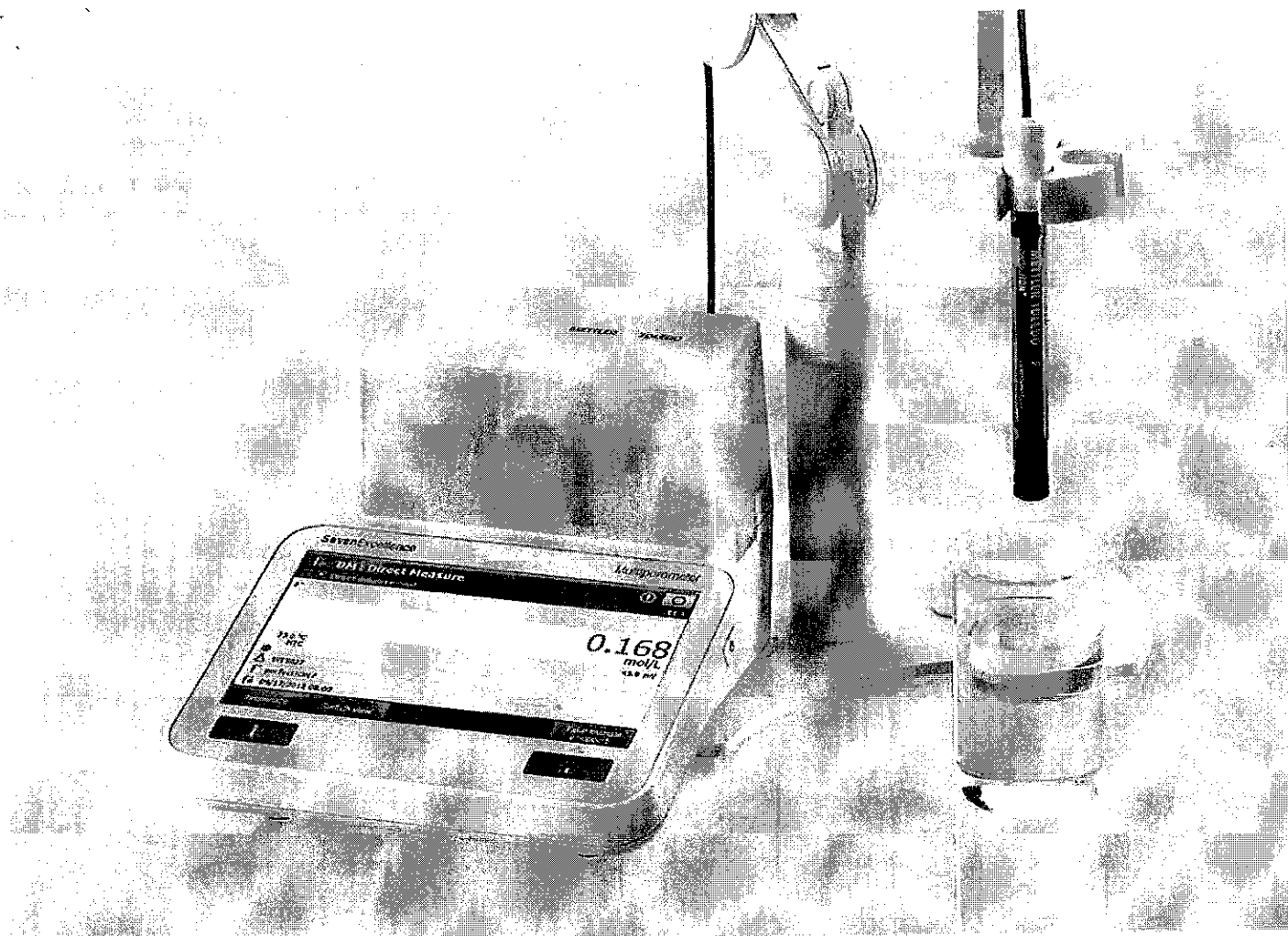


The twelve most commonly used ion types are pre-programmed in the instrument making the settings as convenient as possible. For others you can enter the ion charge and molar mass to ensure that all calculations and conversions are done for you.

Ion measurements – flexible sensor choice



With SevenExcellence it is possible to use our perfectionION™ 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
pH	-2.000 ... 20.000	0.001 / 0.01 / 0.1	± 0.002
mV*	-2000.0 ... 2000.0	0.1 / 1	± 0.1
Ion concentration	0 ... 999 999 mg/L, ppm	0.001 ... 1	± 0.5%
Temperature**	-30.0 ... 130.0 °C	0.1 °C	± 0.1 °C

Calibration	Max. 5 points, 8 pre-defined and 20 user-defined buffer groups
Methods	17 pre-defined and 60 user defined methods
System	Date/time, PIN-protection, user management, 10 languages
Data storage / Data export	At least 20 000 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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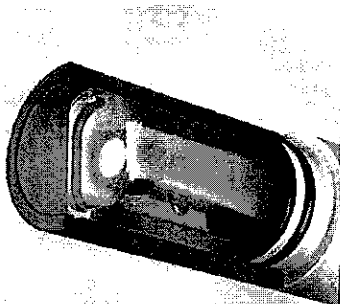
SevenExcellence™ DO/BOD

Professional and Precise

The model S900 offers a bench-top solution with OptiOx™ technology: the optical measurement of dissolved oxygen. Thanks to OptiOx, measuring dissolved oxygen is easier than ever before. For applications where the traditional polarographic measurement is preferred the S600-Kit is recommended.

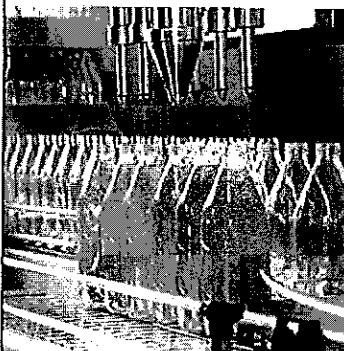
Optical oxygen measurement is superior to conventional technologies. OptiOx is fast, precise and produces highly reproducible results. Because of the optical measuring principle used, the oxygen is not chemically consumed during the measurement, which makes stirring the sample superfluous. The InLab OptiOx requires no polarization time, meaning you can start your measurement immediately. In addition, the whole measuring system has a high level of stability making calibration rarely necessary.

**Extremely easy handling,
zero maintenance**



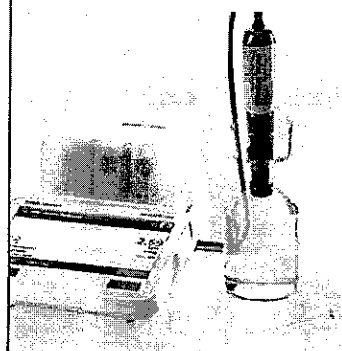
The principle of optical measurement requires no membranes or electrolyte solutions. A used cap can be replaced by simply removing it and fitting a new one. A new cap lasts a whole year and the device informs you in good time when the next cap change is due.

**Suitable for a wide range
of applications**

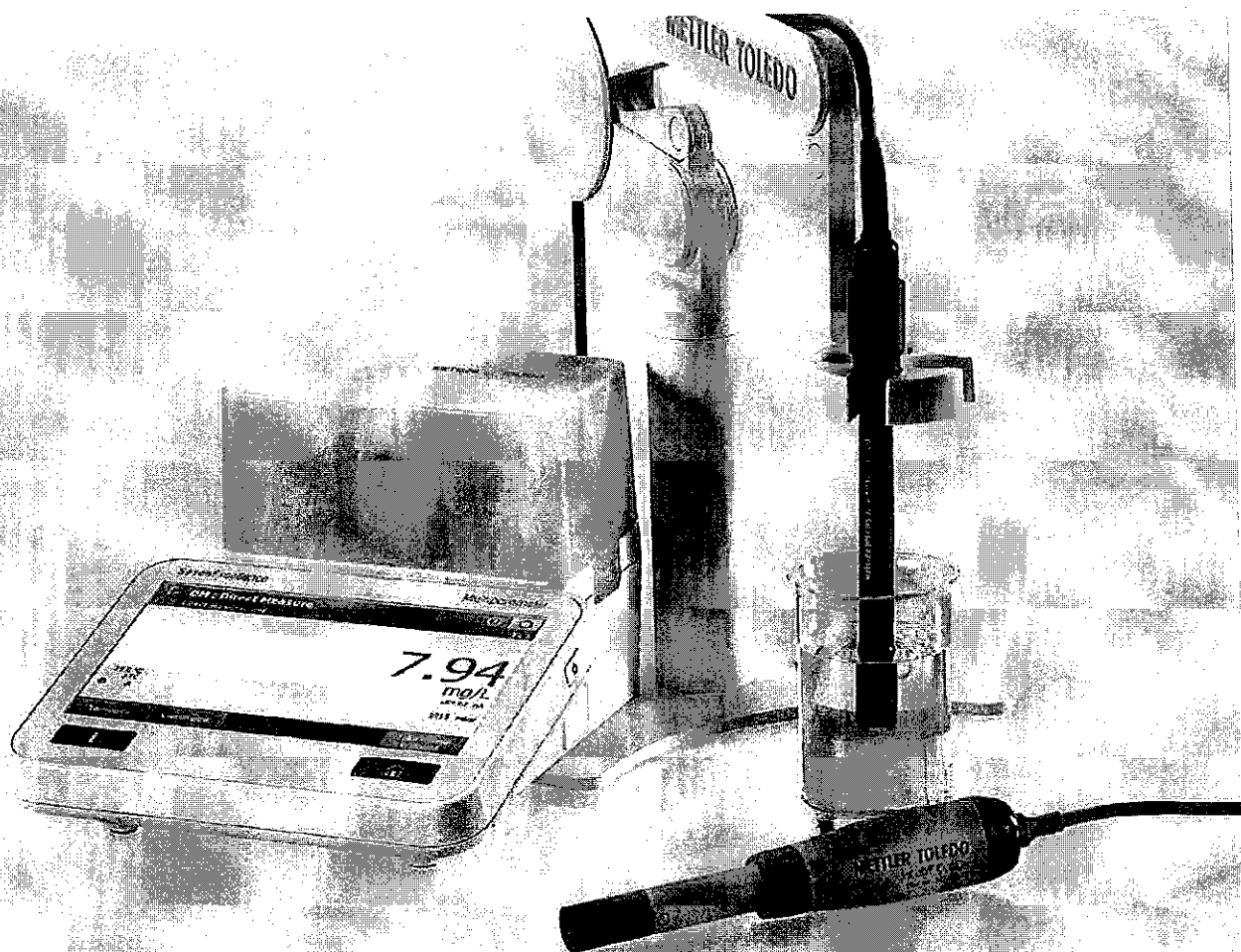


Thanks to the robust design and the customized accessories, the InLab OptiOx is a true allrounder. Thus, it is ideally equipped for use in the laboratory, e.g. in quality monitoring, or, when fitted with the OptiOx protective guard, in harsh environments.

**Biochemical oxygen demand
(BOD)**



The BOD content of any effluent can be checked very easily. With the special BOD adapter, the sensor is suitable for measuring in all current types of BOD bottles. According to the EPA (Environmental Protection Agency, USA), stirring is not necessary thanks to RDO technology. With the S900-BOD Kit you are ready to start.



Description and order information for SevenExcellence™ DO/BOD

Parameter		InLab® OptiOx – optical	InLab® 605-ISM – polarographic
Dissolved oxygen	Measuring range	0.000 ... 50 mg/L (ppm)	0.000 ... 99 mg/L (ppm)
	Display resolution	0.001	0.001
	Accuracy	± 0.1 mg/L from 0 ... 8 ± 0.2 mg/L from 8 ... 20 ± 10% from 20 ... 50	± 0.5%
	Units	mg/L, ppm	mg/L, ppm
DO saturation	Measuring range / Resolution	0.0 ... 500% / 0.1	0.0 ... 600% / 0.1
Pressure	Measuring range	500 ... 1100 mbar	500 ... 1100 mbar
	Resolution / Accuracy	1 / ± 1	1 / ± 1
General	Calibration points	2	2
	Sensor input	MiniLW (IP67)	BNC
	Pressure compensation	automatic / manual	automatic / manual

Order info	Description and sensors	Order no.
S900-Basic	Includes instrument, DO/BOD 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.	30092984
S900-Kit	As S900-Basic but with InLab® OptiOx, guide to DO measurement and zero oxygen tablets.	30092986
S900-BOD	As S900-Kit, also including BOD adapter.	30092987
S600-Kit	As S900-Kit, but with InLab® 605-ISM instead of InLab® OptiOx.	30092985

Triple channel instrument with pH/mV, conductivity and DO/BOD expansion units

S479-Kit	Includes instrument, pH/mV, conductivity and DO/BOD 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. Included kit sensors: InLab® Expert Pro-ISM, InLab® 731-ISM and InLab® OptiOx.	30092988
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Discover the Safest Path to the Top with Good Electrochemistry Practice™

Various factors can affect your pH, redox, conductivity, dissolved oxygen or Ion measurements. Take 5 minutes to localize your risks and get the necessary support:

► www.mt.com/GEP



www.mt.com/pH

For more information

Mettler-Toledo AG, Analytical
CH-8603 Schwerzenbach, Switzerland
Tel. +41 22 567 53 22
Fax +41 22 567 53 23

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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.

InLab® Sensors



InLab® Sensors

pH

ORP

Conductivity

Ion Concentration

Dissolved Oxygen

Origin of Precision

Proven Sensor Technology for Safe Results

METTLER

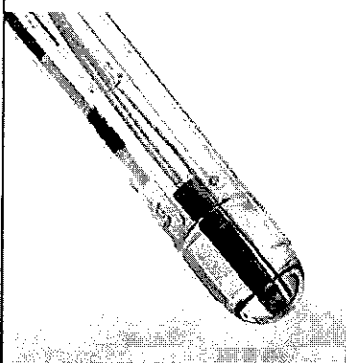
TOLEDO

InLab® Sensors

Developed for Your Applications

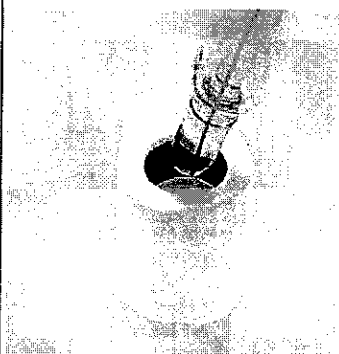
The manufacturing of high quality sensors with outstanding performance not only requires technical skills and expertise but also a profound understanding of the various customer applications and their specific requirements. METTLER TOLEDO has built up an enormous treasure trove of experience and knowledge over the last decades, which has resulted in a complete sensor portfolio that supports any of your applications.

Performance to Trust



Measurements have to be fast, precise and reproducible. Tried and trusted technologies combined with state-of-the-art production processes guarantee highest performance for every InLab sensor, providing reliable results at any time.

Easy to Use

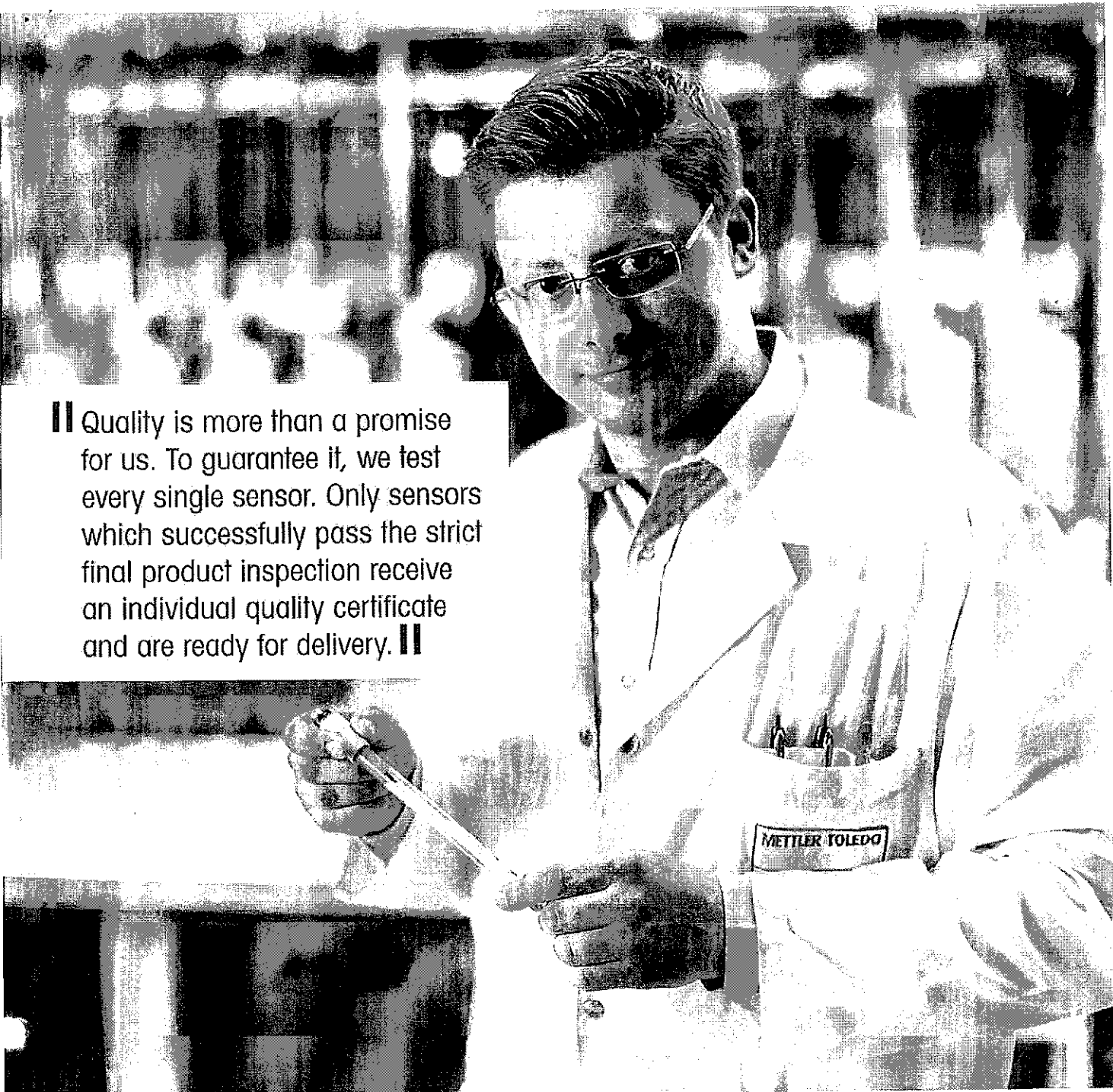


All InLab sensors are shipped ready to use. Everything you need for your measurement comes together with the sensor. Your work in the lab will be simplified by application specific sensors, automatic recognition of ISM sensors and the spillfree wetting cap.

Built to Last



The thought-out InLab sensor construction as well as the high-quality materials used for manufacturing guarantee high robustness even in harsh applications. The versatile sensor portfolio ensures the perfectly suited sensor for every application, a match that greatly extends the lifetime of the products.



|| Quality is more than a promise for us. To guarantee it, we test every single sensor. Only sensors which successfully pass the strict final product inspection receive an individual quality certificate and are ready for delivery. ||

Precision is our Tradition – Since 1948

InLab[®] Sensor Technology

Proven Reliability

The variety of electrochemical sensors is as diverse as the applications they are used for. Only the right combination of high-quality materials, tried-and-trusted technologies, and the shape of the membrane make a sensor perfectly suited for a specific application.

Membrane Glass

The membrane is the pH sensing part of the sensor. Its shape and glass composition are optimized to assure best results for different applications.

HA – High alkali glass with low alkali error for high pH values and high temperatures.

U – Universal glass for standard applications and small membranes.

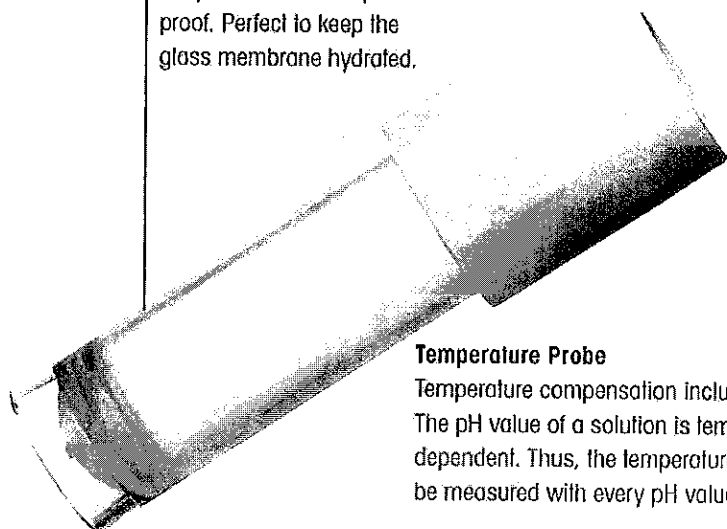
A41 – highly robust glass particularly resistant to harsh chemicals, suitable for high temperatures.

LoT – Low temperature glass with low resistance. Suitable for samples with low temperatures and low ion concentrations.

HF – Hydrofluoric acid resistant glass for samples containing hydrofluoric acid (up to 1 g/L).

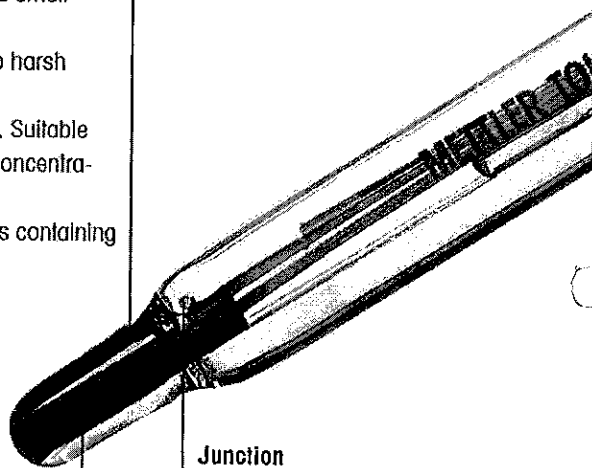
Wetting Cap

Ready to use at any time, easy to handle and spill proof. Perfect to keep the glass membrane hydrated.



Temperature Probe

Temperature compensation included! The pH value of a solution is temperature dependent. Thus, the temperature should be measured with every pH value.



Junction

The junction is the connection between the reference electrolyte and the sample.

Ceramic Junctions

For general applications.

Sleeve Junctions

For fast results, best in dirty samples.

Open Junctions

For easy cleaning and clog-free measurement.

SafeLock™

For refillable sensors: easy to open for measurement, perfectly sealed for storage and transport.

Reference Electrolyte

Liquid electrolytes are typically used for general applications and provide fast results. Polymer or gel electrolytes stand for low maintenance.

Shaft Material

The sensor robustness is dependent on the right shaft material. Glass is highly chemically resistant and allows for measurements at high temperatures. When mechanical robustness is key, plastic is the preferred material.

Reference System

Provides a stable potential against which the pH dependent potential can be compared.

ARGENTHAL™ with silver ion trap

For silver ion free electrolyte. No clogging of the junction due to sulfide or protein containing samples or TRIS buffers.

SteadyForce™

Pressurized (3 bar) electrolyte ensures electrolyte flow even in viscous samples and guarantees highly reproducible results.

ISM

Intelligent Sensor Management

Every ISM marked sensor offers data security and easy handling.

Secure and efficient

Calibration data and sensor ID are automatically transferred to the meter.

Always up to date

New calibration data are stored in the sensor.

Backup certificate guaranteed

Initial factory calibration is stored in the sensor.

Conclusive calibration history

The last five calibrations are stored in the sensor.

Easy lifetime monitoring

The maximum temperature that the sensor has been exposed to is monitored automatically.

Learn more about the InLab sensor portfolio and the various technological aspects at:

► www.mt.com/electrode-guide

Time is Precious Sensors for Fast Results

Liquid filled electrodes are reliable workhorses, constructed for efficient pH measurements in daily laboratory use of a wide application range. For more complex sample matrices like emulsions or biological media, electrodes with a sleeve junction are recommended.



Routine



Routine Pro



Routine Pro-ISM



Mox Pro-ISM



Science



Science Pro-ISM



Versatile Pro

Electroplating is a common technique used to coat metals in order to add desired properties to them. Strong acids and bases are needed for this process and the robust HA glass of the InLab Routine Pro-ISM is ideal for this application as it covers the whole pH range with an extremely low alkali error.



InLab®	Routine	Routine Pro	Routine Pro-ISM	Mox Pro-ISM	Science	Science Pro-ISM	Versatile Pro
Order number	51343050	51343054	51344055	30248830	51343070	51344072	51343031
pH range	0...14	0...14	0...14	0...14	0...12	0...12	0...14
Temperature probe		NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ		NTC 30 kΩ	NTC 30 kΩ
Type of membrane glass	HA	HA	HA	HA	A41	A41	U
Membrane resistance (25 °C)	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 250 MΩ
Type of junction	Ceramic	Ceramic	Ceramic	Immovable glass sleeve	Movable glass sleeve	Movable glass sleeve	Ceramic
Bridge electrolyte						3 mol/L KCl	
Cable and connection	S7	MultiPin™	MultiPin™	MultiPin™	S7	MultiPin™	1.2 m cable; BNC / RCA
Shaft material	Glass	Glass	Glass	Glass	Glass	Glass	Polysulfone
Shaft length	120 mm	120 mm	120 mm	120 mm	120 mm	170 mm	120 mm
InLab® Routine P11000	The InLab® Routine Pro is also available with a P11000 temperature probe: Order number 51343056						
Common specifications	Type of electrode: pH-combination / Reference system: ARGENTHAL™ with Ag ⁺ -trap / Reference electrolyte: 3 mol/L KCl Temperature range: 0...100 °C / Shaft diameter: 12 mm / Storage: InLab® storage solution (Order number 30111142)						

Always Ready Maintenance-Free Sensors

Well-equipped for challenging tasks. The highly robust PEEK shaft in combination with the open junction makes the InLab Expert both resilient and easy to handle. Its solid reference electrolyte requires no refilling and is always ready for use. If highest performance is expected, the InLab Power is the first choice.



Expert



Expert Pro-ISM



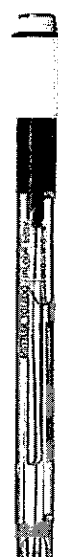
Expert-DIN



Power

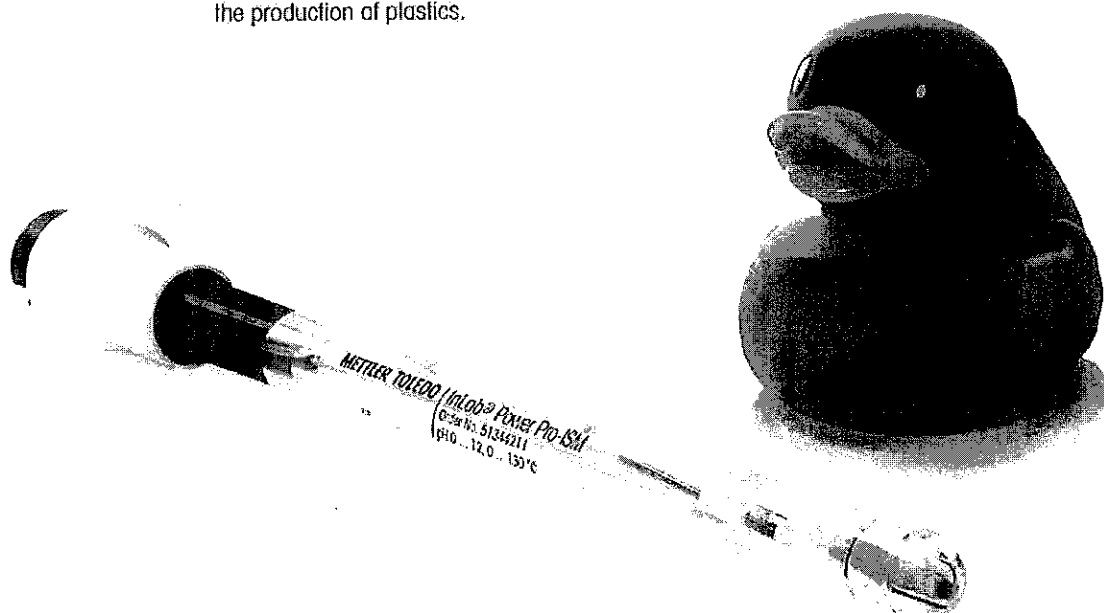


Power Pro-ISM



Easy

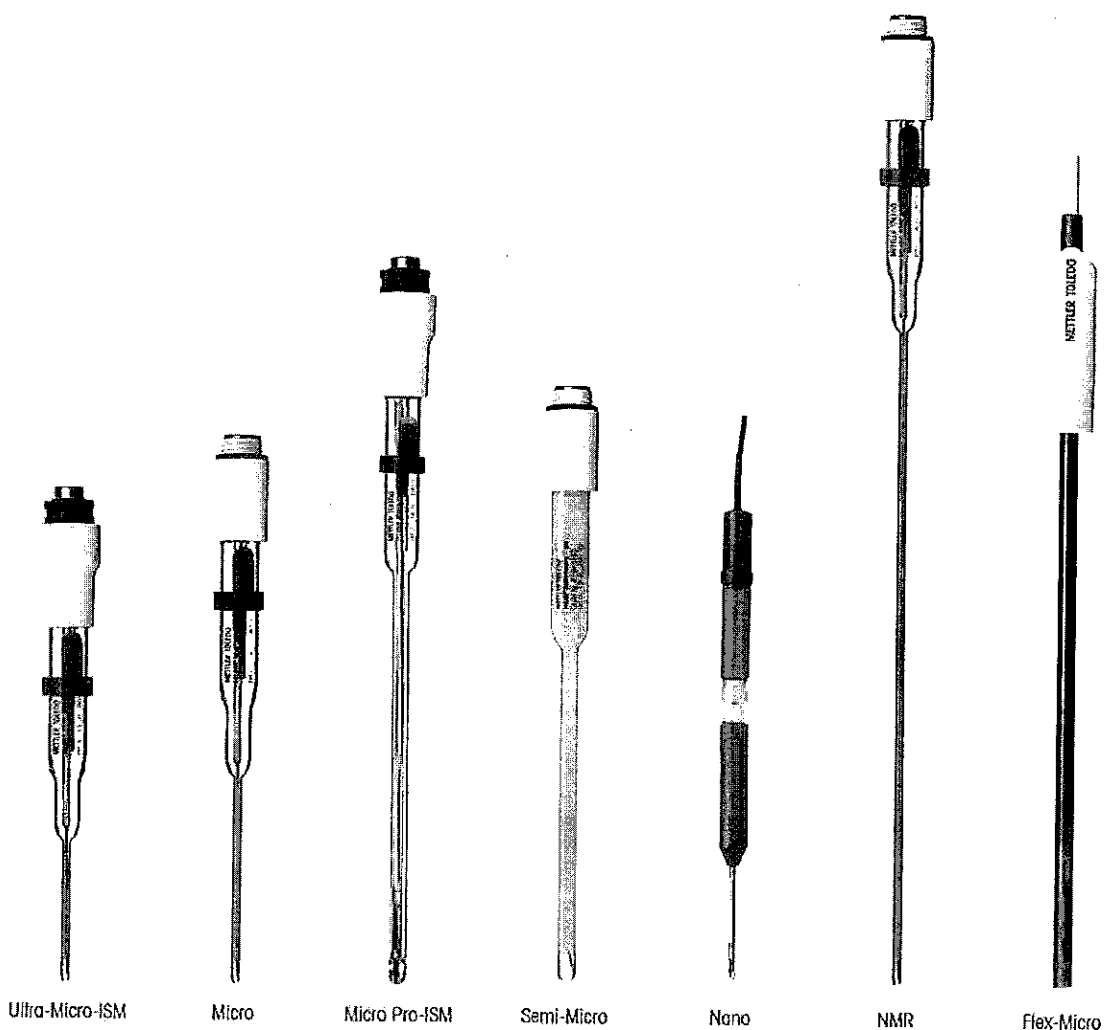
The InLab Power-Pro-ISM is simply brilliant. The SteadyForce™ reference system is under over-pressure. This guarantees highest reproducibility of pH measurements even in challenging samples like polymeric dispersions which are used in the production of plastics.



InLab®	Expert	Expert Pro-ISM	Expert DIN	Power	Power Pro-ISM	Easy
Order number	51343100	30014096	51343103	51343110	51344211	51343010
Order no. non ISM version		51343101				
pH range	0...14	0...14	0...14	0...12	0...12	0...14
Temperature range	0...100 °C	0...100 °C	0...100 °C	0...130 °C	0...130 °C	0...80 °C
Temperature probe		NTC 30 kΩ	PT1000		NTC 30 kΩ	
Type of membrane glass	U	U	U	A41	A41	U
Membrane resistance (25 °C)	< 250 MΩ	< 250 MΩ	< 250 MΩ	< 600 MΩ	< 600 MΩ	< 250 MΩ
Type of junction	Open junctions	Open junctions	Open junctions	Ceramic	Ceramic	Ceramic
Reference system	ARGENTHAL™ with Ag ⁺ -trap	ARGENTHAL™ with Ag ⁺ -trap	ARGENTHAL™ with Ag ⁺ -trap	SteadyForce™	SteadyForce™	ARGENTHAL™ with Ag ⁺ -trap
Reference electrolyte	XEROLYT® Polymer	XEROLYT® Polymer	XEROLYT® Polymer	DPA-Gel	DPA-Gel	Gel
Cable and connection	S7	1.2 m cable; BNC / RCA (Cinch)	1.2 m cable; DIN 19262 / 4 mm	S7	MultiPin™	S7
Shaft material	PEEK	PEEK	PEEK	Glass	Glass	Polysulfone
Shaft length	120 mm	120 mm	120 mm	120 mm	170 mm	120 mm
Shaft diameter	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm
InLab® Expert NTC30	The InLab® Expert Pro is also available with a MultiPin™ connector. Order number 51343104					
InLab® Expert PT1000	The InLab® Expert Pro is also available with a MultiPin™ connector and a PT1000 temperature probe. Order number 51343105					
InLab® Easy BNC	The InLab® Easy is also available with a 1.2 m cable (BNC). Order number 51343011					
Common specifications	Type of electrode: pH-combination / Shaft diameter: 12 mm / Storage: InLab® storage solution (Order number 30111142)					

Nothing is Impossible Sensors for Small Volumes

The more precious or limited the sample, the greater the challenge to use it for analysis. The narrow sensor shaft of micro pH sensors fits in nearly every sample container and enables measurements of sample volumes down to the lower μL ranges.



The InLab Ultra-Micro-ISM allows pH measurements of sample volumes down to 15 μL . Key for any lab working with expensive or precious micro samples.

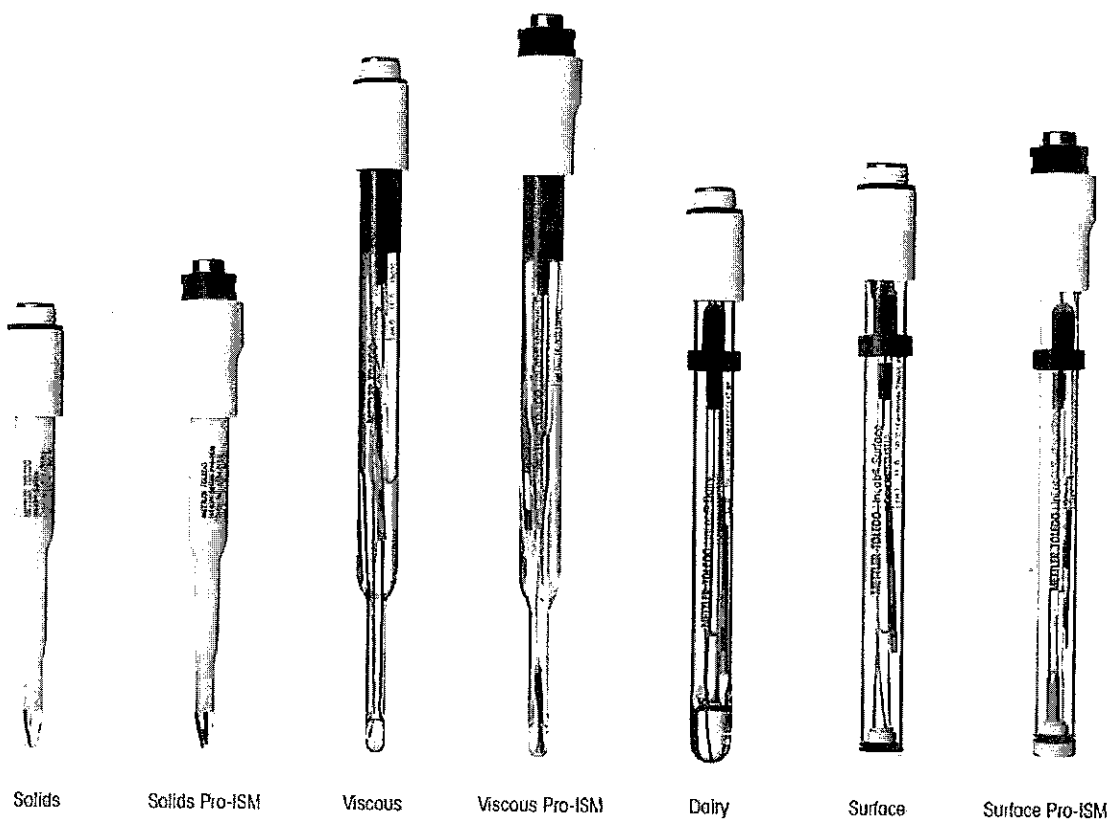


InLab®	Ultra-Micro-ISM	Micro	Micro Pro-ISM	Semi-Micro	Nano	HMR	Flex-Micro
Order number	30244732	51343160	51344163	51343165	30092990	59904572	51343164
pH range	1...11	0...14	0...14	0...12	1...14	0...14	0...14
Temperature range	0...80 °C	0...80 °C	0...100 °C	0...100 °C	0...80 °C	0...80 °C	0...80 °C
Temperature probe			NTC 30 k Ω				
Type of membrane glass	Lot	U	U	A41	U	U	U
Membrane resistance (25°C)	< 700 M Ω	< 1000 M Ω	< 300 M Ω	< 600 M Ω	< 1000 M Ω	< 1000 M Ω	< 600 M Ω
Type of junction	Ceramic	Ceramic	Ceramic	Open junction	Ceramic	Ceramic	Porous PTFE
Reference system	ARGENTHAL™ with Ag ⁺ -trap	ARGENTHAL™ with Ag ⁺ -trap	ARGENTHAL™ with Ag ⁺ -trap	ARGENTHAL™ with Ag ⁺ -trap	Ag/AgCl	ARGENTHAL™ with Ag ⁺ -trap	ARGENTHAL™ with Ag ⁺ -trap
Reference electrolyte	FRISCOLYT-B®	3 mol/L KCl	3 mol/L KCl	XEROLYT®EXTRA Polymer	3 mol/L KCl AgCl saturated	3 mol/L KCl	Gel
Cable and connection	MultiPin™	S7	MultiPin™	S7	1.0 m cable; BNC	S7	1.0 m cable; BNC
Shaft material	Glass	Glass	Glass	Glass	Steel	Glass	Epoxy
Shaft length	40 mm	60 mm	130 mm	100 mm	30 mm	200 mm	180 mm
Shaft diameter	3 mm	3 mm	5 mm	6 mm	1.7 mm	3 mm	6 mm
Minimum sample volume	15 μL	45 μL	100 μL	100 μL	5 μL	45 μL	500 μL
Common specifications	Type of electrode: pH-combination / Storage: InLab® storage solution (Order number 30111142)						

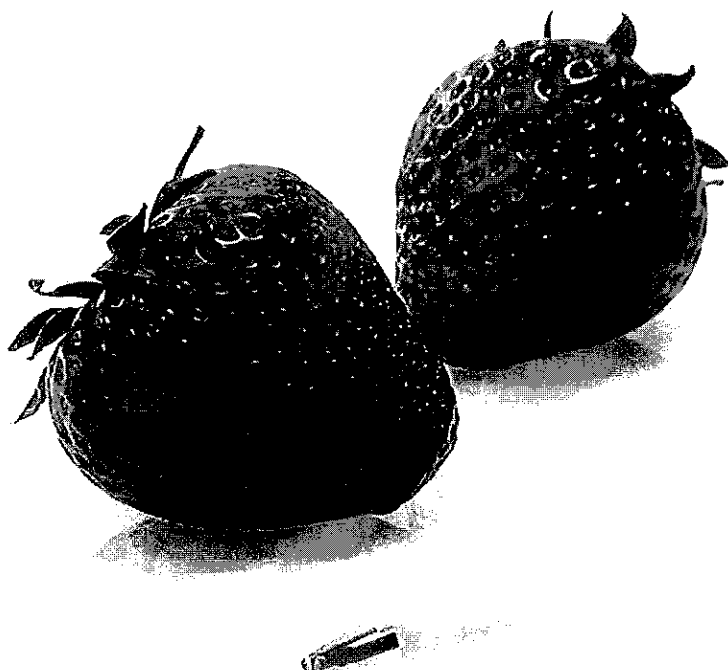
Accept the Challenge

Sensors for Solid and Viscous Samples

The measurement of solid or semi-solid samples is challenging and requires sensors that are robust, ensure proper electrolyte flow and are easy to clean. Sensors with these properties are often requested for food or cosmetic applications.



The pH value is an indicator for the ripeness of fruits. Thanks to the puncture electrode InLab Solids it is possible to measure where it counts: directly in the fruit. Strawberries taste best at a pH of 3.5.

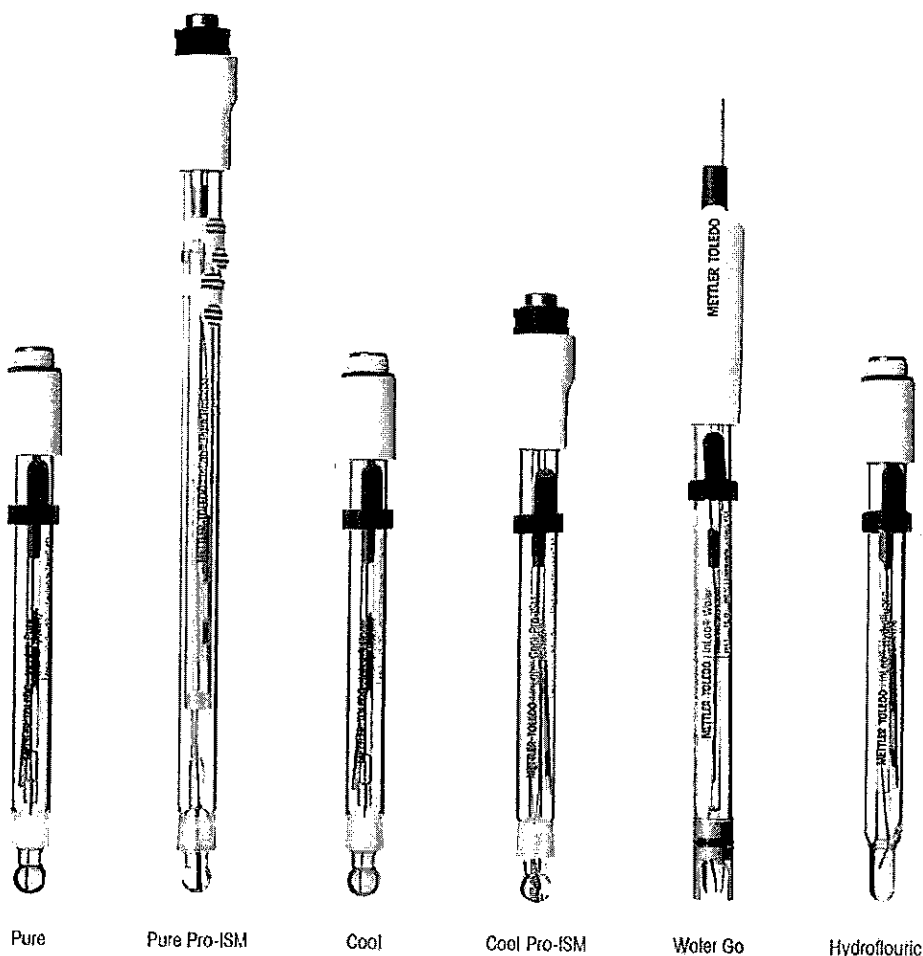


InLab®	Solids	Solids Pro-ISM	Viscous	Viscous Pro-ISM	Dairy	Surface	Surface Pro-ISM
Order number	51343153	51344155	51343150	51343151	59904591	51343157	30249570
pH range	1...11	1...11	0...14	0...14	0...12	1...11	1...11
Temperature range	0...80 °C	0...80 °C	0...130 °C	0...130 °C	0...100 °C	0...50 °C	0...50 °C
Temperature probe		NTC 30 kΩ		NTC 30 kΩ			NTC 30 kΩ
Type of membrane glass	LoT	LoT	HA	HA	A41	LoT	LoT
Membrane resistance (25 °C)	< 250 MΩ	< 250 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 800 MΩ	< 800 MΩ
Type of junction	Open junction	Open junction	Ceramic	Ceramic	Triple ceramic	Ceramic ring	Ceramic ring
Reference system	ARGENTHAL™ with Ag ⁺ -trap	ARGENTHAL™ with Ag ⁺ -trap	SteadyForce™	SteadyForce™	ARGENTHAL™ with Ag ⁺ -trap	ARGENTHAL™ with Ag ⁺ -trap	ARGENTHAL™ with Ag ⁺ -trap
Reference electrolyte	XEROLYT®EXTRA Polymer	XEROLYT®EXTRA Polymer	FRYSCOLYT-C®	FRYSCOLYT-C®	FRYSCOLYT-B®	3 mol/L KCl	3 mol/L KCl
Cable and connection	S7	MultiPin™	S7	MultiPin™	S7	S7	MultiPin™
Shaft length	25 mm	25 mm	40 mm	40 mm	120 mm	120 mm	120 mm
Shaft diameter	6 mm	6 mm	6 mm	6 mm	12 mm	12 mm	12 mm
Common specifications	Type of electrode: pH-combination / Shaft material: Glass / Storage: InLab® storage solution (Order number 30111142)						

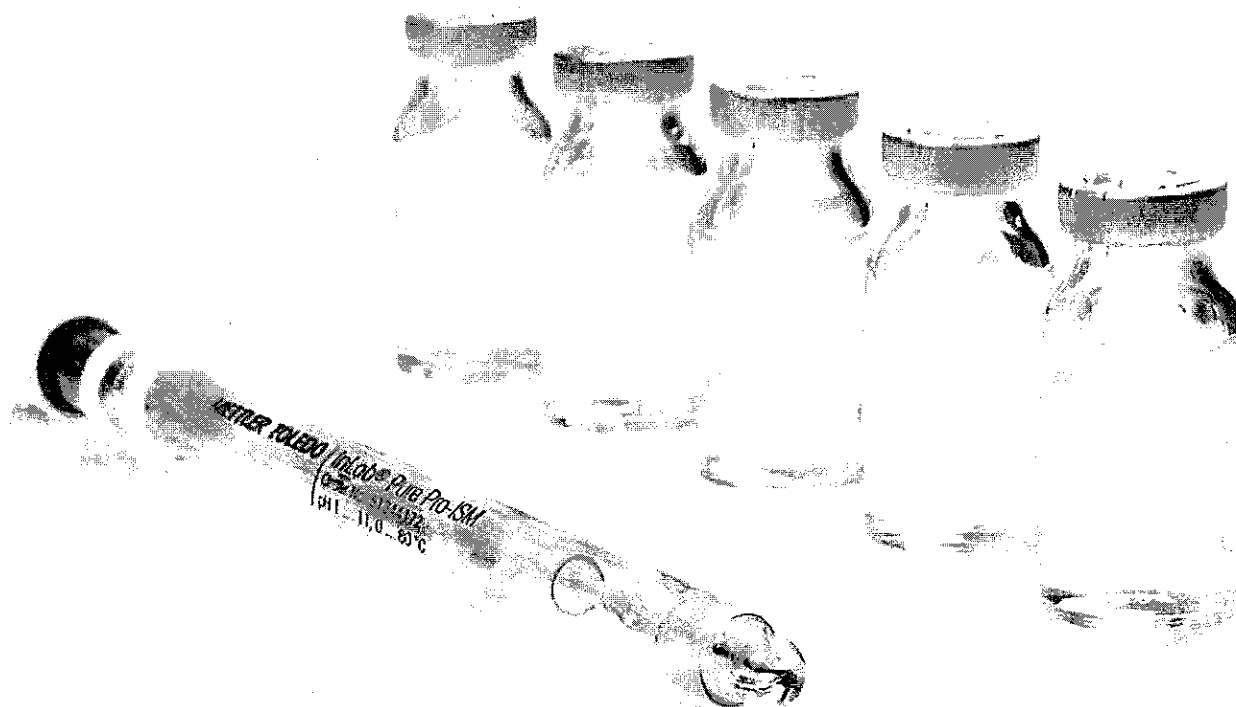
Pure Performance

Low Temperatures and Ionic Strength

A special membrane glass and a large membrane surface are typical characteristics for sensors suited for measuring in samples at low temperatures or with low ion concentrations. One of the key areas of application is the measurement of pure water at various levels of purity.



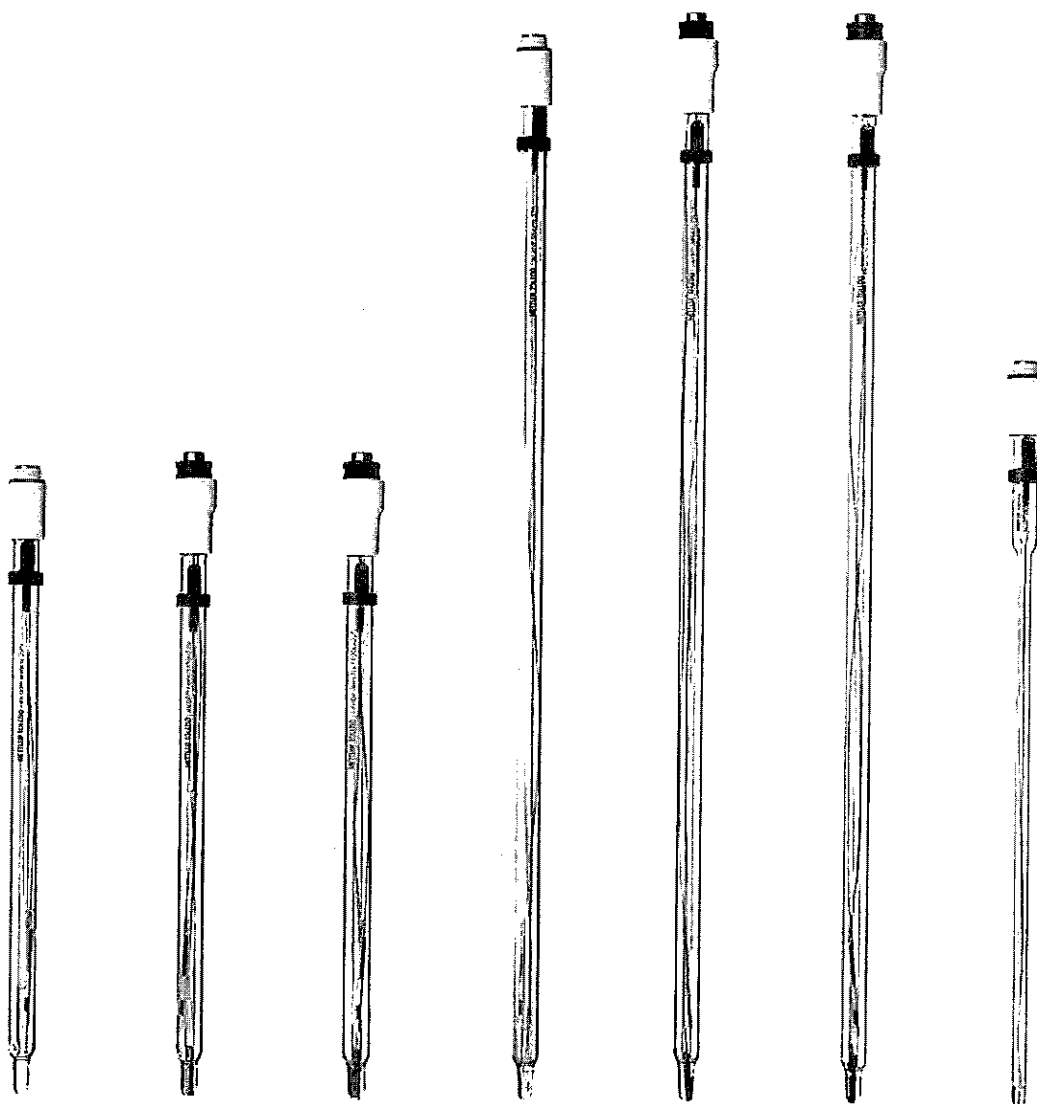
Pure water is a key ingredient in every pharmaceutical production process. The InLab Pure Pro-ISM convinces with a strong performance in weak ionic strength samples.



InLab®	Pure	Pure Pro-ISM	Cool	Cool Pro-ISM	Water Go	Hydrofluoric
Order number	30248112	51344172	51343174	30247850	30253098	51343176
pH range	1...11	1...11	1...11	1...11	1...11	1...11
Temperature range	0...80 °C	0...80 °C	-30...80 °C	-30...80 °C	0...80 °C	0...100 °C
Temperature probe		NTC 30 kΩ		NTC 30 kΩ	NTC 30 kΩ	
Type of membrane glass	LoT	LoT	LoT	LoT	LoT	HF
Membrane resistance (25 °C)	< 50 MΩ	< 50 MΩ	< 50 MΩ	< 50 MΩ	< 150 MΩ	< 100 MΩ
Type of junction	Immovable glass sleeve	Immovable glass sleeve	Immovable glass sleeve	Immovable glass sleeve	Porous PTFE	Ceramic
Reference electrolyte	FRYSCOLYT-B®	3 mol/L KCl	FRYSCOLYT-B®	FRYSCOLYT-B®	3 mol/L KCl	3 mol/L KCl
Bridge electrolyte		1 mol/L KCl				
Cable and connection	S7	MultiPin™	S7	MultiPin™	1.8 m cable; BNC / RCA (Cinch)	S7
Shaft material	Glass	Glass	Glass	Glass	Polysulfone	Glass
Shaft length	120 mm	170 mm	120 mm	120 mm	120 mm	120 mm
Common specifications	Type of electrode: pH-combination / Reference system: ARGENTHAL™ with Ag ⁺ -trap / Shaft diameter: 12 mm Storage: InLab® storage solution (Order number 30111142)					

Reach New Depths Long Sensors

The deeper the container, the more difficult it gets to reach the sample. Sensors with especially long and robust shafts are required for proper pH measurements in very deep or narrow containers.



Reach 225

Reach Pro-225

Reach PI1000-225

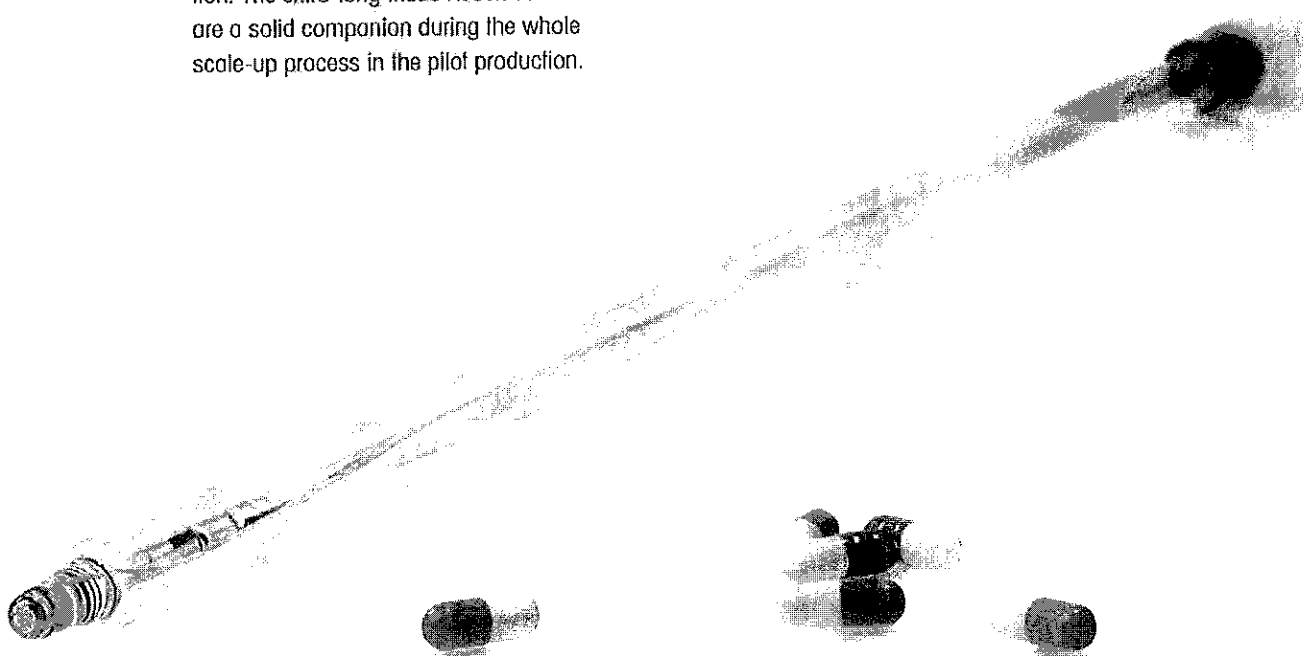
Reach 425

Reach Pro-425

Reach PI1000-425

Semi-Micro-L

From the chalk board to experimental reactions to ultimately the final formulation. The extra-long InLab Reach sensors are a solid companion during the whole scale-up process in the pilot production.



InLab®	Reach 225	Reach Pro-225	Reach PI1000-225	Reach 425	Reach Pro-425	Reach PI1000-425	Semi-Micro-L
Order number	30244733	30248826	30248828	30248120	51343061	51343062	51343161
pH range	0...14	0...14	0...14	0...14	0...14	0...14	0...14
Temperature range	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C
Temperature probe		NTC 30 kΩ	PT1000		NTC 30 kΩ	PT1000	
Type of membrane glass	HA	HA	HA	HA	HA	HA	U
Membrane resistance (25 °C)	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 600 MΩ	< 300 MΩ
Cable and connection	S7	MultiPin™	MultiPin™	S7	MultiPin™	MultiPin™	S7
Shaft length	225 mm	225 mm	225 mm	425 mm	425 mm	425 mm	230 mm
Shaft diameter	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	6 mm
Common specifications	Type of electrode: pH-combination / Type of junction: Ceramic / Reference electrolyte: 3 mol/L KCl / Shaft material: Glass Storage: InLab® storage solution (Order number 30111142)						

Extended Possibilities Sensor Specialists

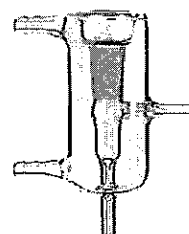
Special applications require special technologies. The digital InLab Smart Pro-ISM sensor provides helpful sensor diagnostic functions for increased system uptime. For inline measurements the InLab Flow together with the Flow-through cell 611 is the best choice.



Smart Pro-ISM



Flow



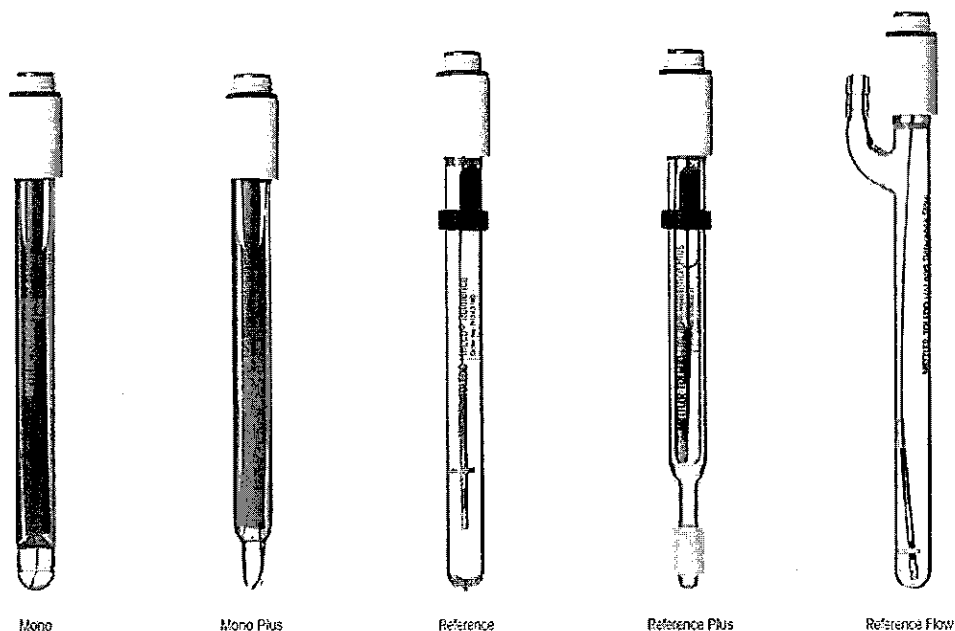
Flow-through cell 611

InLab®	Smart Pro-ISM	Flow	Flow-through cell 611
Order number	30027775	59902917	59904354
Type of electrode	digital pH combination	pH combination	Flow-through cell for InLab® Flow
pH range	0...14	0...11	
Temperature range	0...130 °C	0...80 °C	
Temperature probe	NTC 30 kΩ		
Type of membrane glass	HA	U	
Membrane resistance (25 °C)	< 600 MΩ	< 250 MΩ	
Type of junction	Ceramic	Double ceramic	
Reference system	SteadyForce™	SteadyForce™	
Reference electrolyte	DPA-Gel	DPA-Gel	
Cable and connection	K8SD	S7	
Shaft material	Glass	Glass	
Shaft length	120 mm	40 mm	
Shaft diameter	12 mm	7 mm	
Common specifications	Storage: InLab® storage solution (Order number 30111142)		

Useful Helpers

pH Half-Cells and Reference Electrodes

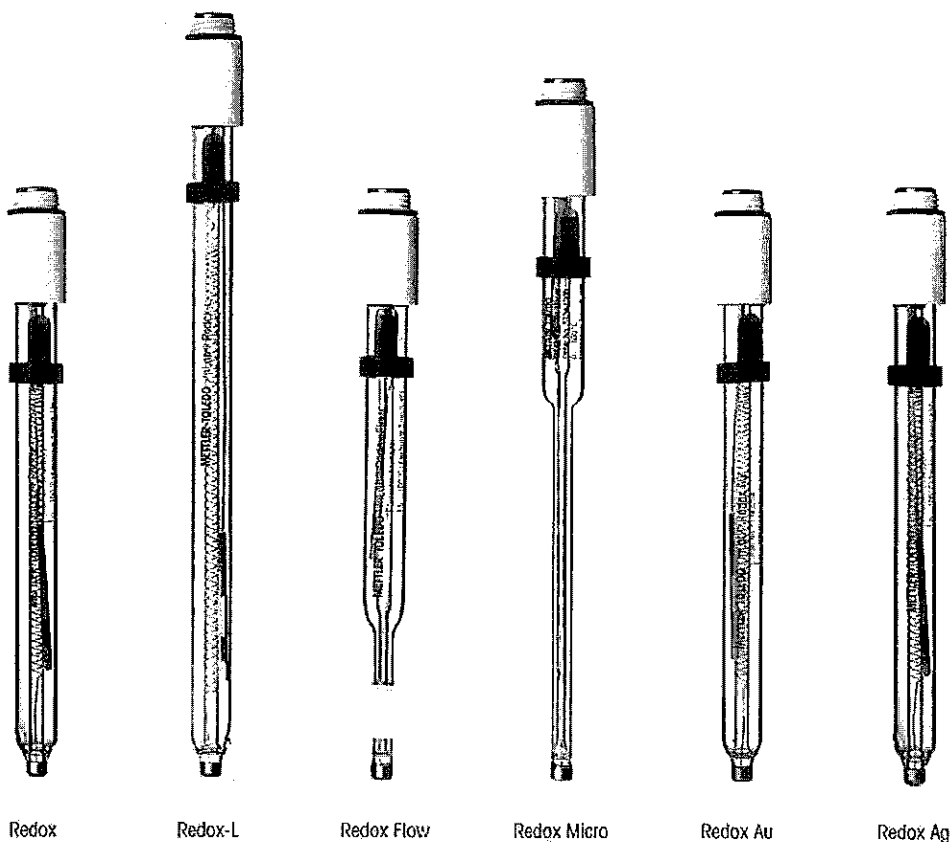
In some cases it is advisable to use a separate pH half-cell and reference electrode instead of a combined pH sensor. pH half-cells are recommended for applications in which the service life of the pH electrode is significantly less than that of the reference electrode, typically in harsh, aggressive samples.



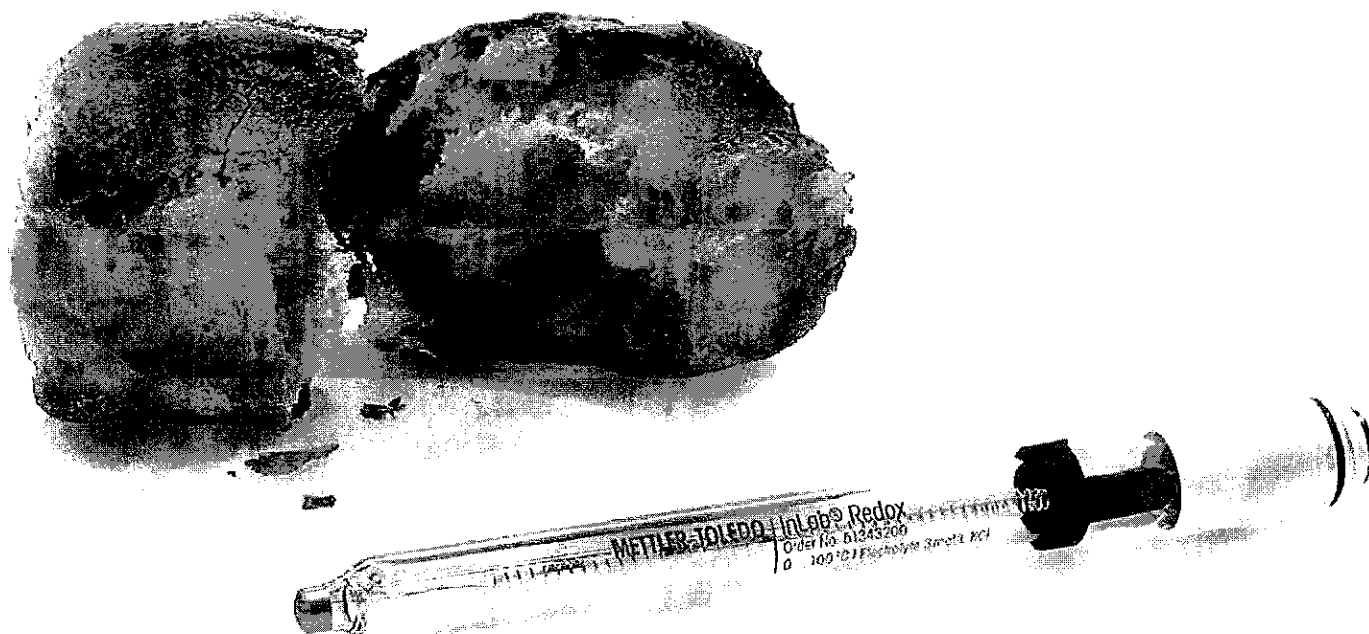
InLab®	Mono	Mono Plus	Reference	Reference Plus	Reference Flow
Order number	51343195	51343196	51343190	51343191	51343192
Type of electrode	pH half-cell	pH half-cell	Reference electrode	Reference electrode	Reference electrode
pH range	0...14	0...12			
Temperature range	0...100 °C	0...130 °C	0...100 °C	0...60 °C	0...130 °C
Type of membrane glass	HA	A41 thick-walled			
Membrane resistance (25 °C)	< 600 MΩ	< 700 MΩ			
Type of junction			Ceramic	Moveable PTFE-sleeve	Triple ceramic
Reference system			ARGENTHAL™ with Ag ⁺ -trap	ARGENTHAL™ with Ag ⁺ -trap	ARGENTHAL™ with Ag ⁺ -trap
Reference electrolyte			3 mol/L KCl	Gel	3 mol/L KCl
Bridge electrolyte				3 mol/L KCl	
Storage	3 mol/L KCl	3 mol/L KCl			
Common specifications	Shaft material: Glass / Cable and connections : S7 / Shaft length: 120 mm / Shaft diameter: 12 mm Storage: InLab® storage solution (Order number 30111142)				

High Potential ORP Electrodes

Sensors that measure ORP (oxidation reduction potential) have to cope with similar challenges as pH sensors. Thus, the correct combination of reference system, junction, and shape are of equal importance for successful ORP measurements.



Fluffy bread with a crispy crust requires a well-controlled baking process. The InLab Redox allows bakeries to control the fermentation process of dough in an easy and efficient way.



ORP

InLab®	Redox	Redox-L	Redox Flow	Redox Micro	Redox Au	Redox Ag
Order number	51343200	51343202	51343201	51343203	51343204	51343205
Type of electrode	Combined ORP	Combined ORP	Combined ORP	Combined ORP	Combined ORP	Combined ORP
Temperature range	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C
Type of junction	Ceramic	Ceramic	Moveable glass sleeve	Ceramic	Ceramic	Ceramic
Reference electrolyte	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KNO ₃
Shaft length	120 mm	170 mm	120 mm	100 mm	120 mm	120 mm
Shaft diameter	12 mm	12 mm	12 mm	6 mm	12 mm	12 mm
Metal	Platinum ring	Platinum ring	Platinum ring	Platinum ring	Gold ring	Silver ring
Storage	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	3 mol/L KCl	1 mol/L KNO ₃
InLab® Redox Pi805	Metal half-cell with platinum ring: Order number 59904377					
InLab® Redox Ag805	Metal half-cell with silver ring: Order number 59904391					
InLab® Redox Ag850	Metal half-cell with silver tip and polypropylene shaft: Order number 59904408					
Common specifications	Reference system: ARGENTHAL™ with Ag ⁺ -trap / Cable and connections: S7 / Shaft material: Glass					

Ions in Motion Conductivity Probes

InLab conductivity probes with 2-pole cells provide the highest accuracy at low conductivity levels. Probes with 4-pole cells display a great linearity over a large conductivity range and are best suited for samples with mid to high conductivity.



731-ISM



741-ISM



Troce



710



720

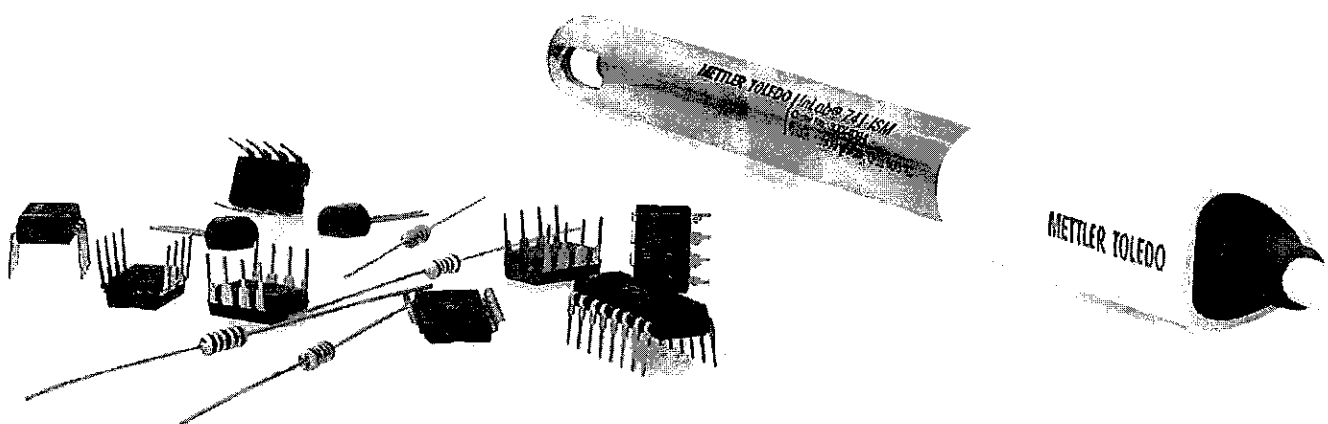


751-4mm



752-6mm

Ultrapure water is extensively used for the production of microelectronics and semiconductors. Its purity must be guaranteed and regularly checked. This is exactly the application for which the InLab 741-ISM was made for.



InLab®	731-ISM	741-ISM	Trace	710	720	751-4mm	752-6mm
Order number	30014092	30014094	30014097	51302256	51302255	51344030	51344031
Order no. non-ISM version	51344020	51344024					
Measuring range	0.01...1000 mS/cm	0.001...500 µS/cm	0.0001...1000 µS/cm	0.01...500 mS/cm	0.1...500 µS/cm	0.01...100 mS/cm	0.01...112 mS/cm
Temperature range	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C	0...100 °C
Temperature probe	NTC 30 kΩ	NTC 30 kΩ	PT1000	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ
Cable and connection	1.2 m cable; Mini-DIN	1.2 m cable; Mini-DIN	1.8 m cable; Mini-LTW	1.2 m cable; Mini-DIN	1.2 m cable; Mini-DIN	1.2 m cable; Mini-DIN	1.2 m cable; Mini-DIN
Shaft material	Epoxy	Stainless steel	Titanium	Glass	Glass	Glass	Glass
Shaft length	120 mm	120 mm	67 mm	120 mm	120 mm	120 mm	180 mm
Shaft diameter	12 mm	12 mm	12 mm	12 mm	12 mm	4 mm	6 mm
Cell constant	0.57 cm ⁻¹	0.105 cm ⁻¹	0.01 cm ⁻¹	0.80 cm ⁻¹	0.06 cm ⁻¹	1.0 cm ⁻¹	1.0 cm ⁻¹
Cell type	4 graphite poles	2 steel poles	2 titanium poles	4 platinum poles	2 platinum poles	2 platinum poles	2 platinum poles
InLab® 731-2m	The InLab® 731 is also available with a 2 m cable: Order number 51344022, Order number ISM 30014093						
InLab® 741-5m	The InLab® 741 is also available with a 5 m cable: Order number 51344026						
Kit InLab® Trace & Flow-cell	Kit with InLab® Trace and flow-cell: Order number 30014099						
InLab® 725	The InLab® 720 is also available with a cell constant of 0.1 cm ⁻¹ : Order number 30014160						
Common specifications	Type of electrode: Conductivity cell / Storage: dry						

Everywhere you Measure

Sensors for Mobile Applications

Portable meters are often used in harsh environments, such as in near-process or outdoor areas. Sensors for mobile use have to be robust and IP67 waterproof, and are, thus, equipped with fixed cables.



Expert Go-ISM



Routine Go-ISM



Solids Go-ISM



738-ISM



742-ISM



605-ISM



OptiOx



The measuring of complex samples like suspended soil is child's play for the InLab Expert Go-ISM. Thanks to the open junction, there is nothing which can contaminate or falsify results.

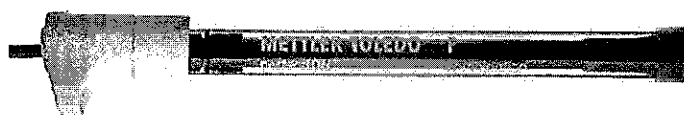


	pH			Conductivity		Dissolved oxygen	
InLab®	Expert Go-ISM	Routine Go-ISM	Solids Go-ISM	738-ISM	742-ISM	605-ISM	OptiOx
Order number	1.8 m cable	51344102	30248832	51343158	51344110	51344116	51344611
ISTA version	5 m cable	51344103			51344112	51344118	51344621
	10 m cable	51344104			51344114		51344622
Order number non-ISM version	1.8 m cable	51340288			51344120	51344126	51340291
Measuring range	0...14 pH	0...14 pH	1...11 pH	0.01...1000 mS/cm	0.001...500 µS/cm	0...200%, 0...20 mg/L	0...500%, 0...50 mg/L
Temperature range	0...100 °C	0...100 °C	0...80 °C	0...100 °C	0...100 °C	0...60 °C	0...50 °C
Temperature probe	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ	NTC 30 kΩ	NTC 22 kΩ	NTC 30 kΩ
Membrane glass / detection	U	HA	LoT			Polarographic	Optical
Membrane resistance (25 °C)	< 250 MΩ	< 600 MΩ	< 250 MΩ				
Type of junction / Cell type	Open junction	Ceramic	Open junction	4 graphite poles	2 steel poles		
Reference electrolyte	XEROLYT® Polymer	3 mol/L KCl	XEROLYT® EXTRA Polymer				
Cell constant				0.57 cm ⁻¹	0.105 cm ⁻¹		
Shaft material	PEEK	Glass	Glass	Epoxy	Stainless steel	PPS	PC / ABS
Shaft length	120 mm	120 mm	25 mm	120 mm	120 mm	120 mm	65 mm
Shaft diameter	12 mm	12 mm	6 mm	12 mm	12 mm	12 mm	16 mm
Storage	InLab® storage solution (Order number 30111142)			dry	dry	dry	dry
Connections	Fixed cable: BNC / RCA (Cinch)			Fixed cable: LTW	Fixed cable: LTW	Fixed cable: BNC / RCA	Fixed cable: Mini-LTW
Common specifications	IP67						

Catch Them All

Combined Ion-Selective Electrode

As various as the range of different ions, as various is the selection of ion-selective electrodes (ISE). The special Click & Clear™ junction allows for an optimal contact of the electrolyte solution and the sample. With the dedicated solutions the sample can be optimally prepared for successful measurement of ion concentration.



perfectionION™ sensors



perfectionION™ comb Na⁺

Measuring ion	perfectionION™	Order number electrode	Cable and connections	Measuring range	Temperature range	Optimal pH range	Type of membrane	Reference electrolyte	Order no. membrane module	Order no. ISA solution
Ag ⁺ /S ²⁻	comb Ag ⁺ /S ²⁻	51344700	1.2 m; BNC	10 ⁻⁷ ...1 mol/L	0...80 °C	2...12	Solid state	Ion Electrolyte B 51344751		Ag ⁺ : 51344760 S ²⁻ : see manual
		51344800	1.2 m; Lemo	Ag ⁺ : 0.01...108000 mg/L S ²⁻ : 0.003...32000 mg/L						
Ca ²⁺	comb Ca ²⁺	51344703	1.2 m; BNC	5 · 10 ⁻⁷ ...1 mol/L	0...40 °C	2.5...11	Polymer	Ion Electrolyte A 51344750	51344850	51344761
		51344803	1.2 m; Lemo	0.02...40100 mg/L						
Cl ⁻	comb Cl ⁻	51344706	1.2 m; BNC	5 · 10 ⁻⁵ ...1 mol/L	0...80 °C	2...12	Solid state	Ion Electrolyte B 51344751		51344760
		51344806	1.2 m; Lemo	1.8...35500 mg/L						
CN ⁻	comb CN ⁻	51344709	1.2 m; BNC	8 · 10 ⁻⁶ ...10 ⁻² mol/L	0...30 °C	10...14	Solid state	Ion Electrolyte B 51344751		10 mol/L NaOH
		51344809	1.2 m; Lemo	0.2...260 mg/L						
Cu ²⁺	comb Cu ²⁺	51344712	1.2 m; BNC	10 ⁻⁶ ...0.1 mol/L	0...80 °C	2...12	Solid state	Ion Electrolyte D 51344753		51344760
		51344812	1.2 m; Lemo	6.4 · 10 ⁻⁴ ...6354 mg/L						
F ⁻	comb F ⁻	51344715	1.2 m; BNC	10 ⁻⁶ mol/L...saturated	0...80 °C	4.5...5.5	Solid state	Ion Electrolyte A 51344750		51344765
		51344815	1.2 m; Lemo	0.02 mg/L...saturated						

The sodium chloride content of ketchup can be easily and cost-efficiently determined with the perfectION™ comb Cl⁻ electrode. The ingenious Click&Clear junction makes cleaning of the sensor fast and easy.



Measuring ion	perfectION™	Order number electrode	Cable and connections	Measuring range	Temperature range	Optimal pH range	Type of membrane	Reference electrolyte	Order no. membrane module	Order no. ISA solution
I ⁻	comb I ⁻	51344718	1.2 m; BNC	5 · 10 ⁻⁵ ...1 mol/L	0...80 °C	0...12	Solid state	Ion Electrolyte D		51344760
		51344818	1.2 m; Lemo	0.005...127000 mg/L				51344753		
K ⁺	comb K ⁺	51344721	1.2 m; BNC	10 ⁻⁶ ...1 mol/L	0...40 °C	2.5...11	Polymer	Ion Electrolyte E	51344851	51344762
		51344821	1.2 m; Lemo	0.04...39000 mg/L				51344754		
Na ⁺ ¹⁾	comb Na ⁺	51344724	S7	10 ⁻⁷ ...1 mol/L 0.002...23000 mg/L	0...80 °C	8...11	Na ⁺ -Glass	3 mol/L KCl 51350072		NH ₄ Cl / NH ₄ OH
NO ₃ ⁻	comb NO ₃ ⁻	51344727	1.2 m; BNC	7 · 10 ⁻⁶ ...1 mol/L NO ₃ ⁻	0...40 °C	2.5...11	Polymer	Ion Electrolyte F	51344852	51344763
		51344827	1.2 m; Lemo	0.1...14000 mg/L NO ₃ ⁻ as N				51344755		
Pb ²⁺	comb Pb ²⁺	51344730	1.2 m; BNC	10 ⁻⁶ ...0.1 mol/L	0...80 °C	4...7	Solid state	Ion Electrolyte B		5 mol/L NaClO ₄
		51344830	1.2 m; Lemo	0.2...20700 mg/L				51344751		
Common specifications		Ion-selective electrode (ISE) with built-in reference / Type of junction: Click & Clear™ / Shaft material: Epoxy ¹⁾ exception: perfectION™ comb Na ⁺ : S7 screw cap / ceramic diaphragm / ARGENTHAL™ / Shaft material: Glass								

Tried and Trusted Ion-Selective Half-Cells

Ion-selective half-cells are very flexible in application. They consist of a universal shaft and an ion-specific membrane module that can be exchanged to measure different kind of ions. Membrane modules are available in membrane kits, including the correct electrolyte solution. Half-cells require the use of a separate reference electrode.



DX sensors



DX223- Na^+

Measuring ion	Designation	Order number electrode	Measuring range	Temperature range	Optimal pH range	Type of membrane	Shaft material	Order no. membrane kit	Order no. electrolyte	Electrolyte for reference electrode	ISA solution
Ba^{2+}	DX337- Ba^{2+}	51107674	$1 \dots 4 \cdot 10^{-7}$ mol/L	0...50 °C	2...12	Polymer	POM/PVC	51107688	51107892	3 mol/L KCl	1 mol/L Tris_2HCl
BF_4^-	DX287- BF_4^-	51107676	$1 \dots 3 \cdot 10^{-7}$ mol/L	0...50 °C	2...12	Polymer	POM/PVC	51107690	51107890	2 mol/L MgSO_4	0.5 mol/L MgSO_4
Br^-	DX280- Br^-	51340300	$1 \dots 1 \cdot 10^{-6}$ mol/L	0...80 °C	2...13	Solid state	POM	51340006	51340029	1 mol/L KNO_3	1 mol/L KNO_3
Ca^{2+}	DX240- Ca^{2+}	51340600	$1 \dots 1 \cdot 10^{-6}$ mol/L	0...50 °C	2...12	Polymer	POM/PVC	51340009	51340032	3 mol/L KCl	3 mol/L KCl
Cd^{2+}	DX312- Cd^{2+}	51107672	$1 \dots 1 \cdot 10^{-6}$ mol/L	0...50 °C	2...8	Polymer	POM/PVC	51107686	51107891	1 mol/L KNO_3	1 mol/L KNO_3
Cl^-	DX235- Cl^-	51340400	$1 \dots 2 \cdot 10^{-5}$ mol/L	0...80 °C	2...13	Solid state	POM	51340007	51340030	1 mol/L KNO_3	1 mol/L KNO_3
CN^-	DX226- CN^-	51107681	$1 \dots 2 \cdot 10^{-6}$ mol/L	0...80 °C	4...13	Solid state	POM	51107695	51107893	1 mol/L KNO_3	10 mol/L NaOH
Cu^{2+}	DX264- Cu^{2+}	51107678	$1 \dots 5 \cdot 10^{-7}$ mol/L	0...80 °C	2...8	Solid state	POM	51107692	51107889	1 mol/L KNO_3	1 mol/L KNO_3
F^-	DX219- F^-	51340500	$1 \dots 5 \cdot 10^{-7}$ mol/L	0...80 °C	4...10	Solid state	POM	51340008	51340031	3 mol/L KCl	TISAB III

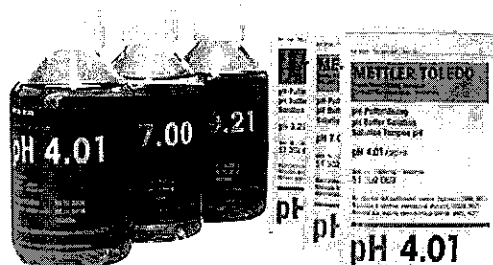
Fluoride is an essential ingredient in various oral hygiene products and the concentration must be controlled properly. Thanks to the DX219-F this is possible without expensive analytical equipment.



Measuring ion	Designation	Order number electrode	Measuring range	Temperature range	Optimal pH range	Type of membrane	Shaft material	Order no. membrane kit	Order no. electrolyte	Electrolyte for reference electrode	ISA solution
F ⁻	DX327-F	51107680	1...2 · 10 ⁻³ mol/L	0...80 °C	1...13	Solid state	POM	51107694	51107898	1 mol/L KNO ₃	1 mol/L KNO ₃
K ⁺	DX239-K ⁺	51340700	1...1 · 10 ⁻⁶ mol/L	0...50 °C	2...12	Polymer	POM/PVC	51340010	51340033	2 mol/L MgSO ₄	0.5 mol/L MgSO ₄
Li ⁺	DX207-Li ⁺	51107673	1...1 · 10 ⁻⁶ mol/L	0...50 °C	2...9	Polymer	POM/PVC	51107687	51107881	3 mol/L KCl	0.5 mol/L MgSO ₄
Na ⁺	DX223-Na ⁺	51340263	1...1 · 10 ⁻⁷ mol/L	0...80 °C	8...11	Na Glass	Glass			0.1 mol/L NH ₄ Cl / NH ₄ OH	NH ₄ Cl / NH ₄ OH
NH ₄ ⁺	DX218-NH ₄ ⁺	51340900	1...4 · 10 ⁻⁷ mol/L	0...50 °C	2...9	Polymer	POM/PVC	51340012	51340035	2 mol/L MgSO ₄	0.5 mol/L MgSO ₄
NO ₂ ⁻	DX262-NO ₂ ⁻	51340800	1...3 · 10 ⁻⁵ mol/L	0...50 °C	2...12	Polymer	POM/PVC	51340011	51340034	2 mol/L MgSO ₄	0.5 mol/L MgSO ₄
Pb ²⁺	DX407-Pb ²⁺	51107873	1...3 · 10 ⁻⁶ mol/L	0...50 °C	2...8	Polymer	POM/PVC	51107874	51107875	1 mol/L KNO ₃	1 mol/L KNO ₃
S ²⁻ /Ag ⁺	DX232-S ²⁻	51107675	1...1 · 10 ⁻⁵ mol/L	0...80 °C	4...13	Solid state	POM	51107689	51107894	1 mol/L KNO ₃	10 mol/L NaOH
SCN ⁻	DX258-SCN ⁻	51107870	1...2 · 10 ⁻⁶ mol/L	0...80 °C	2...10	Solid state	POM	51107871	51107872	1 mol/L KNO ₃	1 mol/L KNO ₃
Common specifications		Type of electrode: Ion-selective half-cell; Cable and connections: S7									

Amazing Solutions For Calibration and Care

Any pH measurement is only as accurate as the buffer solution used for calibration purposes. METTLER TOLEDO buffer solutions are traceable to primary standards and come with a quality inspection certificate, which guarantees the stated values and traceability.



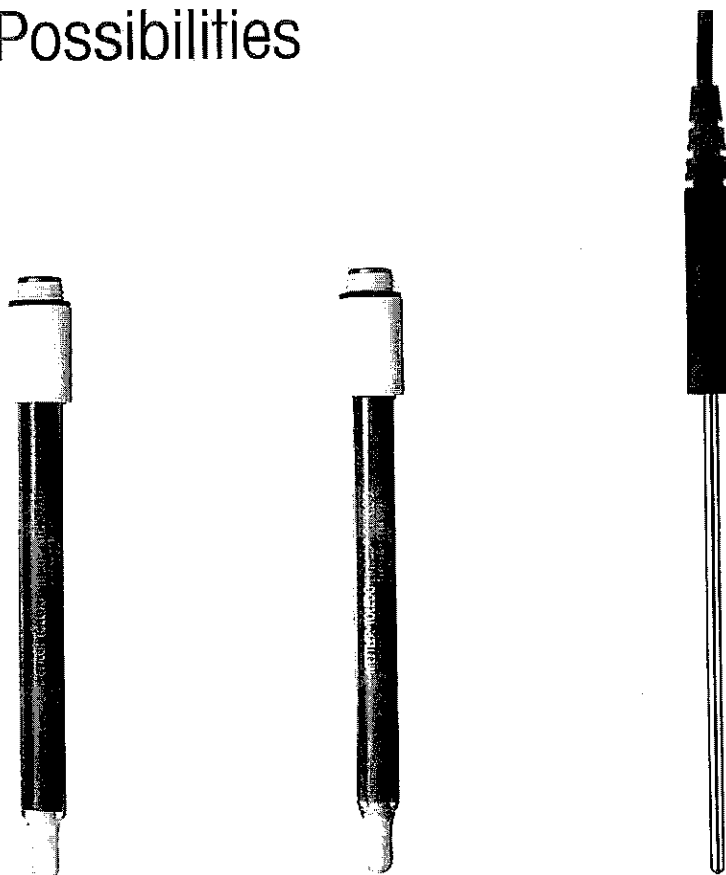
Find detailed information on
► www.mt.com/buffer

	Order number 250 mL	Order number 6 x 250 mL	Order number 30 sachets 20 mL
Technical pH buffer solutions			
2.00	51350002	51350016	30111134
4.01	51350004	51350018	51302089
7.00	51350006	51350020	51302047
9.21	51350008	51350022	51302070
10.00	51350010	51350024	51302079
11.00	51350012	51350026	30111135
Rainbow bottles I (4.01/7.00/9.21)		30095312	
Rainbow bottles II (4.01/7.00/10.00)		30095313	
Rainbow sachets I (4.01/7.00/9.21)			51302068
Rainbow sachets II (4.01/7.00/10.01)			51302080
HIST/DIN pH buffer solutions			
4.006	51350052		30111136
6.865	51350054		30111137
9.180	51350056		30111138
10.012	51350058		30111139
Certified pH buffer solutions			
4.01	51350032	51350042	
7.00	51350034	51350044	
9.21	51350036	51350046	
10.00	51350038	51350048	
Redox buffer solutions (E (Ag/AgCl) at 25 °C)			
220 mV, pH 7 ($U_1 = 427$ mV)	51350060	51350062	
468 mV, pH 0.1 ($U_1 = 675$ mV)			51350064 (6 x 30 mL)

	Order number 25 mL	Order number 250 mL	Order number 6 x 250 mL
Electrolytes for reference electrodes			
KCl solution 3 mol/L	51343180	51350072	51350080
KCl solution 3 mol/L, AgCl saturated	51343184	51350074	51350082
FRISCOLYT-9 [®] , for media with organic compounds	51343185	51350076	51350084
LiCl solution 1 mol/L in ethanol, for non-aqueous media	51350088 (6 x 30 mL)		
Maintenance solutions			
InLab storage solution		30111142	
Pepsin-HCl for cleaning junctions with protein contamination		51350100	
Thiourea solution for cleaning junctions with silver sulfide contamination		51350102	
Reactivation solution for regeneration of glass electrodes	51350104		
Conductivity standards			
	Order number 250 mL	Order number 6 x 250 mL	Order number sachets 20 mL
1.3 µS/cm (single use check solution)	30090847		
5 µS/cm	30094617		
10 µS/cm	51300169		30111141 (10 x 20 mL)
84 µS/cm	51302153		30111140 (10 x 20 mL)
500 µS/cm	51300170		
1413 µS/cm	51350092	51350096	51302049 (30 x 20 mL)
12.88 mS/cm	51350094	51350098	51302050 (30 x 20 mL)

The Right Accessory

Extended Possibilities



Separate temperature sensors

Description	InLab® NTC 30 kΩ Laboratory temperature sensor in glass shaft (120 x 12 mm), with quality certificate	InLab® P11000 Laboratory temperature sensor in glass shaft (120 x 12 mm), with quality certificate	HTC 30 kΩ Laboratory temperature sensor in stainless steel (120 x 3 mm), steel 316
Order Number	51343310	51343312	51300164
Cable and connections	S7	S7	1.2 m; RCA plug

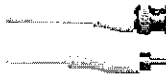
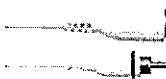
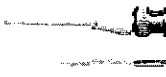
Accessories

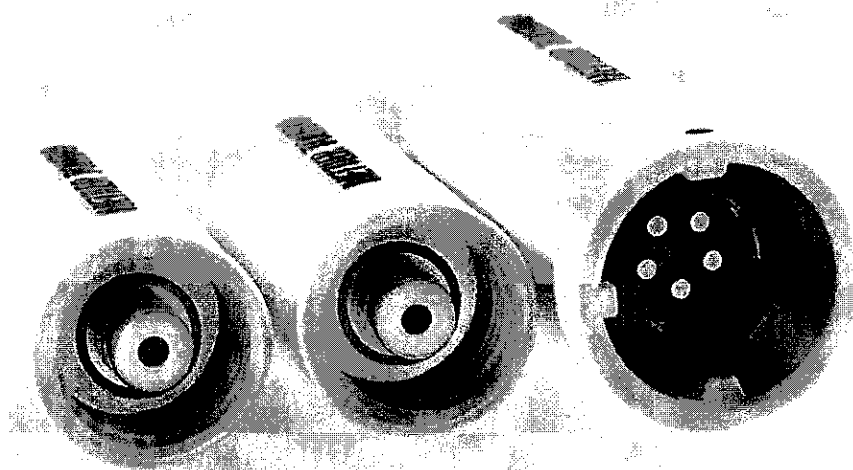
Accessories	Description	
Accessories for InLab® OptiOx™	OptiOx replacement cap	51344630
	OptiOx calibration tube	51344631
	OptiOx protective guard	51344632
	OptiOx BOD adapter	51344633
	OptiOx adapter for uPlace electrode arm	30246619
Flow cell	Flow cell for sensors with a shaft diameter of 12 mm (material: glass)	51302257
Wetting caps	For electrodes with shaft diameter 12 mm	30243851
	For electrodes with shaft diameter 8 mm and InLab Solids family	51340021
	For electrodes with shaft diameter 6 mm	52000442
	For electrodes with shaft diameter 3 mm	52000441
SafeLock™ blue	SafeLock cover for refill hole of pH electrodes (5 pcs.)	30248827
SafeLock™ white	SafeLock cover for refill hole of pH electrodes (5 pcs.)	30248829
Knick adapter	Adapter for sensors with 12 mm shaft diameter to work with Knick portable meters	30247853
Adapter	Adapter sleeve to NS 14.5 for sensors with 12 – 15 mm shaft diameter (material: PE)	51340024

Plug and Play Sensor Cables

METTLER TOLEDO pH sensors can easily be connected to various third-party instruments. All you have to do is select the appropriate cable.

Save money and preserve the environment. Detachable cables can be reused when the pH sensor has reached its end of life.

Connection	Length	Designation	Plug	Socket on the meter	Order number
	1.2 m 3.0 m 5.0 m	BNC + RCA (Cinch)			30281896 30281897 30281898
	1.8 m	BNC + RCA (Cinch) IP67			30281913
	1.2 m	BNC + 1x4 mm banana			30281899
	1.2 m	DIN + RCA (Cinch)			30281910
	1.2 m	DIN 19262 + 1x4 mm banana			30281911
	1.2 m	Lemo 00 + 2x4 mm banana			30281912



Connection	Length	Designation	Plug	Socket on the meter	Order number
S7 	1.2 m	BNC			30281915
	3.0 m				30281916
	5.0 m				30281917
	1.2 m	BNC IP67			30281918
	1.2 m	DIN 19262			30281919
	3.0 m				30281920
	5.0 m				30281921
	1.2 m	Lemo 00			30281925
	3.0 m	no connector			30281926
	5.0 m				30281927
	10.0 m				30281928
For reference electrodes	1.2 m	4 mm banana			30281922
	1.2 m	2 mm banana			30281923
For temperature probes	1.2 m	RCA (Cinch)			30281924

Which pH Sensor for Which Application?

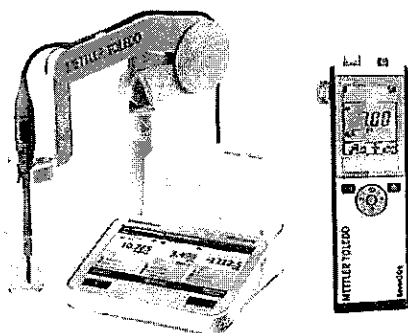
The table below helps you to find the best sensor for your application. For more detailed information on the individual sensors refer to the indicated pages of the brochure or visit www.mt.com/electrode-guide.

		InLab [®]									
Application		Routine	Max	Science	Versatile	Expert	Easy	Power	Nano	Micro	
	See page	6 / 7				8 / 9 and 24 / 25				1	
Aqueous samples	Drinking water										
	Soft surface water										
	Pure and ultrapure water										
	Waste water										
	Highly saline solution, sea water										
	Cold sample (< 5 °C)										
	Hot sample (> 100 °C)										
Pharmaceutical & biological samples	Vial and microplate										
	NMR tube										
	Test tube										
	Serum and gastric juice										
	TRIS buffer										
	Micro-biological sample										
	Disinfection										
	Yeast fermentation solution										
Chemicals & baths	Starch solution										
	Corrosive acid & base										
	Galvanic bath										
	HF bearing sample (< 1 g/L)										
Food	Organic solvent										
	Fruit & vegetable										
	Meat & fish										
	Dough										
	Milk & cream										
	Butter, yogurt & ice cream										
Beverages	Cheese										
	Soft drink										
	Fruit juice										
	Beer										
Viscous samples	Wine										
	Gel, soap & shampoo										
	Cosmetic										
Emulsion	Resin										
	Paint										
	Oily sample										
	Colorant & dye										
	Varnish and glue										
Surface measurements	Suspended solids (e.g. soil)										
	Skin & leather										
	Textil & print										
	Paper										
Large sample vessels	Agar plate										
	Drop size sample										
	Pilot reactor										
	Tank & barrel										
	Aquarium										

This interactive guide makes the sensor selection even easier. Additionally you find best practice sensor handling movies, a troubleshooter and much more.

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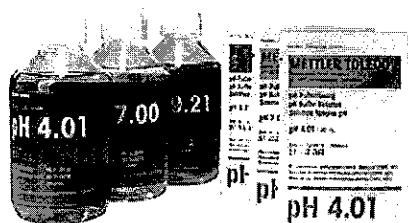
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For more information

Mettler-Toledo GmbH, Analytical
Im Langacher 44
8606 Greifensee, Switzerland
Tel. +41 22 567 53 22
Fax +41 22 567 53 23

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