maintenance today

4 Time of Flight mapping

We take you through the basics of mapping ToF devices

15 my | eCampus

A world of online technical training awaits...



maintenance today

the magazine for all instrument users

6 Mapping a ToF device

One of the most frequently asked questions of our technical support staff is how to map a level measurement device. We explain how to do it...



10 Meet our Coordinators 13 Field Xpert launch

Discover more about our Service Coordinators who perform a vital role in liaising between our customers and our service engineers.



Our Field Xpert handheld device configurator is your perfect partner in the field, designed to reduce the time spent on set-up and diagnosis.



- Process safety in the driving seat Safety is part of what we do from the very beginning and continues throughout our entire manufacturing process.
- 8 UK calibration competence Endress+Hauser performs and advises on all aspects of calibration, from in-situ testing through to fully accredited factory calibration.
- Case study: Hydrostatic level measurement

Union Papertech gets confident with accurate and reliable level measurement.

- Get your free Operations app Based on our tried and trusted online Device Viewer, our mobile 'Operations' app offers fast access to a wealth of devicespecific information on the go!
- my | eCampus technical training High-quality online training for all those involved in industrial process engineering.
- For more information on any of our services, please visit www.uk.endress.com/services

Imprint

Publisher Endress+Hauser Ltd, Floats Road, Manchester, M23 9NF. Editors Chris Nolan, Lisa Rothwell, Helen White **Date of publication** December 2013

Reprint Any printing, even in parts, is forbidden without prior permission. This document remains the property of the company.



Process safety from Endress+Hauser

Managing your risk is critical in an industrial environment: you must protect the community, the environment and your assets. When it comes to process safety Endress+Hauser has the expertise and experience to support you with your process automation, including product, service and solutions requirements.

The safety of your process, people and the environment is of fundamental importance to Endress+Hauser. From the initial design through to manufacture, application, commissioning, operation, maintenance and proof testing Endress+Hauser is there to support you every step of the way.

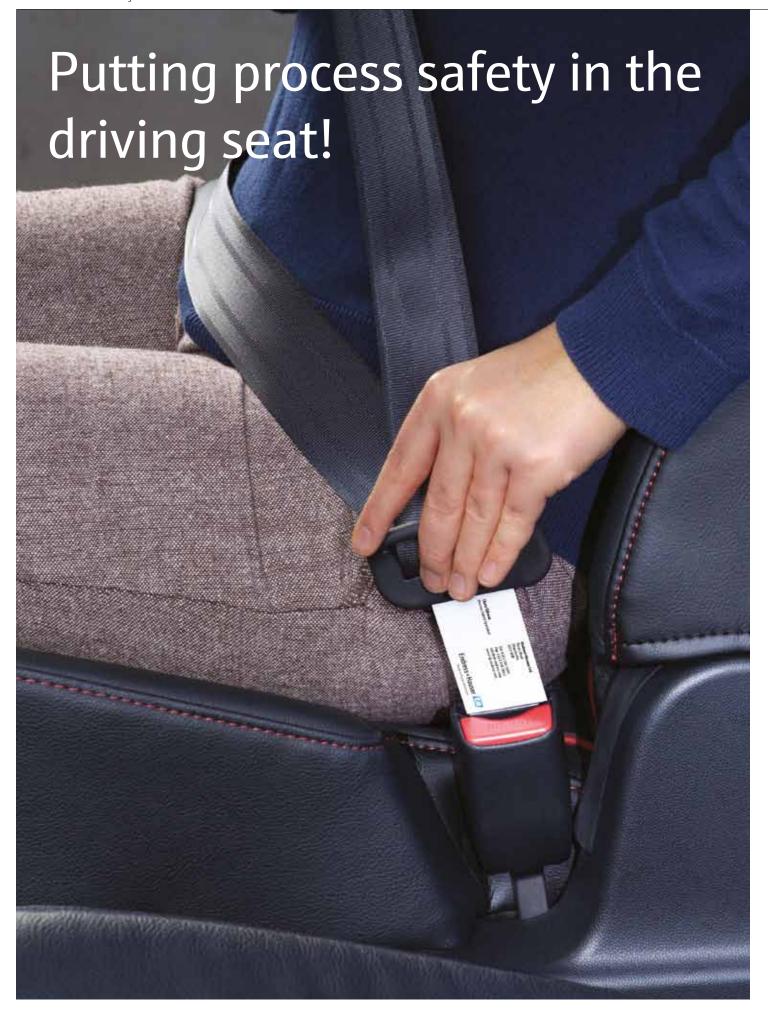
After 60 years in the process automation business, we offer the widest range of measurement technology choices. Designed and extensively tested from the outset with safety in mind, our instrumentation will reliably operate in even the toughest applications. Explosive environments are catered for with a complete portfolio of hazardous area protection approvals and for safety-critical applications, SIL compliant devices are available for every measurement discipline. With such a comprehensive selection of products available, Endress+Hauser can help you choose the best-fit solution for your process automation requirements.

Chiris

Chris Gibson Process Safety Specialist



For more information on process safety, see page 5.



The importance of process safety has been highlighted in recent months and years, with several high-profile incidents making headlines around the world.

In April this year, 14 people were killed and 200 injured after an explosion at a fertiliser plant in West, Texas. Damage to surrounding homes and businesses was estimated at \$100 million. And nobody can forget the oil disaster in the Gulf of Mexico in 2011 which has generated compensation claims of more than \$11 billion and rising. Evidently when things go wrong on an industrial plant it can have a catastrophic effect on people and the environment as well as the plant itself. For that reason, in everything Endress+Hauser does – development, manufacturing, distribution and servicing – we always put the safety of people and the environment first.

Safety by design

Safety is a part of what we do from the very beginning and continues throughout our entire manufacturing process. Endress+Hauser has decades of experience in designing, manufacturing and addressing operational requirements of process field devices, built on generations of product development, industry engagement and customer feedback. Whether you're interested in level, flow, temperature, pressure or analytical equipment, you can take comfort from knowing we have certified processes and rigorous testing routines that bring stability and reliability to our instrument performance.

"Safety is part of what we do from the very beginning and continues throughout our entire manufacturing process."





Safety by design is evident throughout our range. We have:

- More than 250 certified product lines.
- The most extensive portfolio of Safety Integrity Level (SIL) field devices developed in accordance with IEC 61508.
- Extended proof test intervals up to 12 years.
- A comprehensive range of gas and dust explosion protection approvals.
- Several product lines successfully audited by the rigorous Emphasis assessment method developed by the nuclear industry.
- Robust safety-related device designs for safe containment at all times.
- 60 years of process safety know-how.

Rely on us

Are you currently investigating what measures can be taken within your installed base or new project to maximise safety? Our engineers are trained and experienced in all aspects of process safety, including explosion protection, functional safety and safety by design. We can support you by providing recommendations on products, solutions and services that can help you meet your goals.



Mapping Time of Flight devices

One of the most frequently asked questions of our technical support staff is how to map a level measurement device. Here we explain why mapping is necessary and how to do it...

The Time of Flight principle

Radar, guided radar and ultrasonic level measurement instruments are 'downward-looking' measuring systems that operate according to the Time of Flight (ToF) principle. What is measured is the distance from the reference point to the product surface. Pulses (microwave or ultrasound) are emitted by the instrument, reflected by the product surface, received by the electronic evaluation unit and converted into level information.

Why is a customer map needed?

For radar and ultrasonic level measurement instruments, it is necessary to map out interference reflections created inside the tank. This map is based on the factory map and preferably done with an empty tank. This way, all eventual interference reflections caused by installations in the tank are detected and stored in the memory.

A customer map is recorded over the actual factory map. The customer map covers all additional reflections from inside the tank. Only significant echoes will then exceed the customer map and be evaluated. The mapping can also be performed up to the level or a defined distance, even if the tank is not empty. However, if the level drops below the mapping distance, additional reflections can interfere with the measurement.

For more information on our range of Time of Flight level devices, visit: www.uk.endress.com/level

How to create a customer map

First you will need to confirm whether the measured distance matches the actual distance. Depending on the selection, the device automatically determines the range over which the mapping will be recorded.

To do this on your Micropilot radar or Levelflex guided radar device, select Navigation Setup > Mapping > Confirm distance. Then make your selection from the following options...

Manual map

To be selected if the range of mapping is to be defined manually in the 'Mapping' end point parameter. In this case it is not necessary to confirm the distance.

Distance ok

To be selected if the measured distance matches the actual distance. The device performs a mapping and quits the sequence ('End of sequence' appears on the display).

Distance unknown

To be selected if the actual distance is unknown. A mapping cannot be performed and the device quits the sequence ('End of sequence' appears on the display).

Distance too small

To be selected if the measured distance is smaller than the actual distance. The device performs a mapping and returns to the 'Confirm distance' parameter. The distance is recalculated and displayed. The comparison must be repeated until the displayed distance matches the actual distance.

Distance too big

To be selected if the measured distance is bigger than the actual distance. The device adjusts the signal evaluation and returns to the 'Confirm distance' parameter. The distance is recalculated and displayed. The comparison must be repeated until the displayed distance matches the actual distance.

Tank empty

To be selected if the tank is completely empty. The device records a mapping covering the complete length of the probe and quits the sequence ('End of sequence' appears on the display).

Delete all

To be selected if the present mapping curve (if one exists) is to be deleted. The device returns to the 'Confirm distance' parameter and a new mapping can be recorded.

Additional information

For reference purposes, the measured distance is displayed together with this parameter.

If the procedure 'Distance too small' or 'Distance too big' is quit before the distance has been confirmed, a map is not recorded and the procedure is reset after 60 seconds.









UK calibration competence

Endress+Hauser performs and advises on all aspects of calibration, from in-situ testing through to fully accredited factory calibration. We see our calibration service as part of your maintenance planning and will support you from the initial audit of your installed base through to repairs and replacements. For you this means reliable advice, optimum performance of your instruments and true cost-effectiveness.

In-house calibration

At our UK headquarters in Manchester we have a suite of calibration laboratories employing state-of-the-art technology to meet your calibration needs. Our facilities are traceable to national standards and meet the requirements of ISO 17025. Your instruments can be returned in fewer than five days on request.

We calibrate instruments across a range of measuring principles:

Our in-house water flow calibration rig incorporates the very latest developments in Endress+Hauser flow technology to provide high quality, water-based flow calibrations. Flowmeters from 8-100mm are calibrated

against Endress+Hauser Promass Coriolis twin reference meters. Calibration of your flowmeter can be carried out in volume or mass, with a calibration uncertainty of $\pm 0.08\%$. Our flow calibration rig is suitable for any meter with DIN/ANSI flanges, screwed threads or hygienic process connections and flow ranges from $0.1 \text{m}^3/\text{hr}$ to $90 \text{m}^3/\text{hr}$ (100-90,000kg/hr).

Pressure

Our experienced technicians will calibrate your pressure device to your own metrological specifications in our state-of-the-art laboratory. We can calibrate device ranges from 25 mbar up to 250 bar to a certified uncertainty of ± 0.015 mbar in the range of 0 to 10 bar or ± 0.05 bar in the range 0 to 250 bar. Our computerised systems mean that our work is both rapid and flexible.

Temperature

Temperature measurement is a vital factor in the quality control of your final product. In our in-house laboratory we will calibrate your temperature device to your specific requirements (from -15° C up to 600° C).

Test and measuring equipment

Endress+Hauser's in-house calibration facilities can also test and calibrate engineers' test and measuring devices such as frequency counters, multimeters and resistance boxes.

On-site calibration services

On-site calibration is performed by specialist, highly trained engineers. Convenient and cost-effective, it removes the need to send instruments off site as our specialists come to you, keeping downtime to an absolute minimum. It also offers the highest flexibility as calibration can be scheduled according to the availability of each of your devices. Our qualified and experienced field service engineers can diagnose faults there and then, performing adjustment and

recalibration instantly where necessary. Having our engineers on your site also offers the benefit of direct communication with your staff and means that calibration takes place close to the operating conditions. All Endress+Hauser calibrations are traceable to national standards and calibration certificates are ISO 17025 compliant.

On-site analytical calibration

In the field of analytical calibration, we now offer a calibration service for your Memosens digital sensors. Using the latest advances in offline calibration, we can perform fully documented, traceable calibration of your pH/ORP, conductivity, dissolved oxygen and chlorine Memosens sensors. Additionally, the final report includes all of the sensor's calibration and operation history, including a chart showing historical slope and zero point – vital aids for predictive maintenance.



For more information, call us on 0161 286 5150 or visit: www.uk.endress.com/calibration-services

"We see our calibration service as part of your maintenance planning and we will support you from the initial audit of your installed base through to repairs and replacements."





Meet our Coordinators!

At the heart of Endress+Hauser's UK headquarters in Manchester is a busy Service Department. Our experienced team of almost 50 service engineers, coordinators and administration staff work hard to make sure we can always meet your expectations, whether you're looking for scheduled maintenance work or a reactive visit.

Scott Roberts and James Richardson are two of our Service Coordinators who perform a vital role in liaising between our customers and our service engineers. They're in charge of scheduling reactive service work – whether that's fault-finding, investigating a breakdown or commissioning. Scott and James work tirelessly to organise our team of 25 service engineers to ensure we can respond as quickly as possible to your urgent request for a site visit – wherever you are in the UK!

"No two days are the same," says Scott. "I never know what tomorrow will bring! I love the challenge of responding to customers' needs and finding a solution to their problem."

That solution is often found by arranging for one of our qualified engineers to visit a customer's site. Scott and James know that in the event of a breakdown every second counts – and that's why our Premium Support Service offers a same-day visit.

"We have to be extremely flexible to react to our customers' needs as they arise, whether they need immediate support or a slightly less urgent response," says James. "It helps that we know our engineers really well so we can allocate them jobs that match their expertise. That makes each site visit as efficient and productive as possible because the right engineer is sent first time – with the right equipment!"

But organising site visits is not the Service Coordinators' only responsibility. They help customers to access immediate technical support via our telephone helpline, putting them directly in touch with our engineers. They also work very closely with other Endress+Hauser staff including our product and industry managers to ensure their expertise is passed on to our customers.

Scott has 14 years' experience with Endress+Hauser across a range of different departments including sales, production and logistics. On top of his



practical experience in the industry, he has completed theoretical technical training on different measurement parameters including level, flow, pressure and temperature to ensure he has the right skills for the job. The in-house training has also proved useful to James who comes from a customer service background rather than an engineering one. He explains: "As often as I can, I make time in my day to complete some training. It's all accessible online so I can fit the training around my other responsibilities. While we're all really busy, I see the training as a hugely important part of the job as it means I can make informed decisions on issues like whether a site visit is necessary and which tools our engineers will need."

Communication is a key part of the coordinators' job. "It's vital that we share information with our customers and our colleagues," explains Scott. After every site visit by an Endress+Hauser engineer, a post-visit report is automatically sent to the customer (in addition to verbal feedback), providing a formal record of the work undertaken by the engineer and any changes made. Risk Assessments and Method Statements (RAMS) completed prior to the site visit are also shared between the engineer, customer and service staff to ensure everyone has a complete record of all activities undertaken, guaranteeing complete traceability.

Liaising closely with customers and colleagues brings an added benefit, as Scott explains: "Now more customers have long-term Service Agreements with us, we're often asked to carry out reactive work at the same time as a scheduled visit. This saves the customer both time and money by reducing unplanned downtime. By communicating effectively

with our Service Agreements colleagues we always try and come up with the most efficient and costeffective solution for everyone. We're constantly improving the way we work."

Whether you want to arrange an upfront Service Agreement or need help in the event of a breakdown, our service staff are there for you. Call 0161 286 5150 during office hours or email service@uk.endress.com

For urgent out-of-hours enquiries you can call our 24 hour helpline on $0906\ 207\ 5108$ (calls charged at £1/minute).



Case study: Hydrostatic level sensor saves time and money!

From its mill in Heywood near Manchester, Union Papertech supplies long-fibred, speciality filter papers to the international tea and coffee markets. The company is a leading innovator in this field and has developed a broad range of products to meet the specific needs of its diverse customer base. The mill has an annual capacity of over 6,000 tonnes from two manufacturing lines operating around the clock.

The challenge

Union Papertech uses a number of pressure transmitters to monitor level in different parts of its process. But in the past measuring level in the 'pool box', an open tank containing a mix of water and fibre, has proved problematic. The instruments supplied by one of Endress+Hauser's competitors continuously failed, much to the frustration of Union Papertech's Instrumentation Engineer Keith Hopkinson. As he explains: "The actual measurement isn't that critical in this instance but what we do need is repeatability. Week after week we need to know that the transmitter is still reading the same level. The old ones weren't even lasting six weeks! Production used to complain about it all the time." This instrument failure meant Keith had to spend a large proportion of the company's planned downtime trying to fix the problem. "I can't work on it while the machine's running so I had to wait for the machine to shut. I'd take the transmitter off, put it on the bench and test it - but there seemed to be nothing wrong. So I'd replace it and it would fail again. It was very frustrating, especially because the location of the transmitter makes it difficult to access."

Our solution

One of Endress+Hauser's experienced field sales engineers identified the cause of the problem on his first visit to the mill in 2011. He realised that the mill's hot and humid environment was creating condensation that was entering the sensor and causing the drift. The solution was to replace several of the old transmitters with Deltapilot M FMB50 hydrostatic level transmitters. The measuring sensor in the Deltapilot is the unique Contite cell, which has been specially designed for plants with high levels of condensation. The 'condensate tight' Contite cell is hermetically sealed against the outside world quaranteeing long life, stability and reproducibility in these challenging applications. Particularly designed for use in hygienic applications in the food & beverage industry, where CIP or SIP cleaning causes extreme temperature shock, the FMB50 has also proved ideal for use in any environment where condensation is formed.

The results

The staff at Union Papertech are now confident that the level measurements from their pressure transmitters are

accurate and consistent. Due to the successful resolution of the problem, the company has now standardised on Deltapilot M FMB50s for level measurement. "In 18 months since the transmitters were replaced I haven't had any issues with them; I haven't had to touch them," says Keith Hopkinson. "My stress levels have really come down! I couldn't afford to be spending hours fixing the same problem time after time after time. So it's not only saving on downtime but the FMB50s are actually cheaper than the ones I used to have as well! Nowadays I don't have to think what kind of level sensor I'm going to use because I know Endress+Hauser will recommend the right product for me."



For more information, call us on 0161 286 5050 or visit www.uk.endress.com/FMB50



Endress+Hauser's Deltapilot M FMB50 is now used to reliably measure level in the 'pool box'.



Field Xpert: your partner in the field



Field Xpert handheld device configurator.

Call us on 0161 286 5050 or find out more at: www.uk.endress.com/fieldxpert

Our Field Xpert high performance handheld device configurator is your perfect partner in the field design to reduce the time you spend on instrument set-up and diagnosis. Based on an industrial PDA, it offers wireless communication via Bluetooth (modem) or WiFi (gateway access) for maximum usability when you're out on site.

Field Xpert is Endress+Hauser's industrial handheld for efficient configuration and diagnosis of HART, WirelessHART and FOUNDATION fieldbus devices operating in safe and hazardous areas. In addition to being a field communicator with a large device driver library (2,000 preloaded devices), it also can be used for inspection and calibration workflows as well as for managing asset information directly in the field. Via access to advanced field device diagnostics based on NAMUR NE107, you can quickly establish the cause of error messages in order to take swift remedial action.

Streamlining maintenance procedures

Field Xpert simplifies and optimises commissioning and maintenance workflows. It offers simple device access and optimised device configuration with adaptable configuration templates and clear configuration reports to save time on commissioning and increase plant availability. For the first time, complex graphics such as radar envelope curves can be viewed. Thanks to connectivity to CompuCal software solutions, mobile handling of calibration management work orders is possible. All calibration data collected can be seamlessly integrated into calibration management solutions to save time and improve future calibration quality.

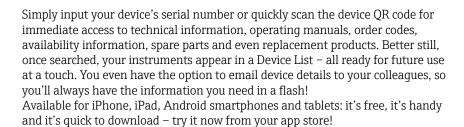
Simple operation

With a high resolution full-VGA touchscreen (640x480 px), operation is simple. Better still, with its truly open operating system and handy features such as mobile phone, camera for immediate emailing of as-is images (safe area version), 1D laser scanner (barcode), 2D imager (data matrix/QR code) and radio-frequency identification (RFID), Field Xpert delivers maximum productivity.

Download your free Endress+Hauser 'Operations' app today!

Based on our tried and trusted online Device Viewer tool, our mobile 'Operations' app offers fast access to a wealth of device-specific information no matter where you are!





An overview of the app functions:

- Detailed device-specific information
- Device List: a list of all devices found from previous searches
- Documentation downloads: technical information, operating manuals and certificates
- Spare parts information
- Share your information with your colleagues via email
- Recommend the app via Facebook, Twitter or email!

Got a smartphone or a tablet? Simply scan the data matrix code on the left to download the 'Operations' app for free today!













my | eCampus Technical training online

Our latest online training solution, my | eCampus, offers high-quality training programmes for all those involved in industrial process engineering.

Technical staff and students alike can use these programmes around the clock to develop their knowledge of measurement technology and automation solutions in a user-friendly way. Measurement technologies along with the associated devices and application solutions are presented in a practical and often interactive way.

And to whet your appetite for learning, we offer a great free introductory course 'Basic Concepts in Measurement Technology'. Gain an understanding of terms such as 'measure', measured value', 'measurement error' and 'reproducibility' before you move on to choosing the courses that suit you. You can even save money by taking out an annual subscription for 12 months' unlimited access to our complete range of courses.

Courses available:

- Coriolis mass flow measurement
- Temperature measurement
- pH measuring technology
- Conductivity measurement
- Dissolved oxygen measurement
- Digital communication
- WirelessHART communication
- Explosion protection international
- Functional safety in the process industry
- Measurement technology in the food & beverage industry
- Calibration basics

Little or no prior technical knowledge is required to complete our courses and all courses offer a progress indicator and certification to support your continued success! Course fees start from ≤ 69 .



For more information, visit my | eCampus at: https://endress.my-e-campus.com

Endress+Hauser Ltd Floats Road Manchester M23 9NF Tel: 0161 286 5000 Fax: 0161 998 1841 info@uk.endress.com www.uk.endress.com

