



# Intelligent Sensor Management for Pharmaceutical Production

ISM®

# Intelligent Sensor Management

Intelligent Sensor Management, or simply ISM<sup>®</sup>, is a digital technology for in-line process analytical systems that simplifies sensor handling, enhances measurement integrity, and reduces sensor life-cycle costs.

These benefits translate into substantial gains for pharmaceutical

companies in relation to production process reliability, data transparency, and managing regulatory compliance.

Unlike analog probes, ISM sensors output a robust digital signal, retain their own calibration and other data, and even predict when they will need maintained or replaced.

In pH, dissolved O<sub>2</sub>, dissolved CO<sub>2</sub>, conductivity, TOC, and dissolved ozone measurement systems ISM gives you much more than just a measurement ...

**Greater process  
reliability**



**Simplified  
compliance**



**ISM<sup>®</sup>**

**Easy sensor  
handling**



# Greater Process Reliability


Ensuring production processes will operate as necessary, and generate the desired product quality and yield in the required time is central to successful pharmaceutical operations. In support of this, ISM offers two significant features: digital communication and pre-batch sensor diagnostics.

## **Digital communication**

Analog sensors send an interference-prone signal to the transmitter, which calculates the parameter value. ISM sensors are different. The parameter value is calculated within the sensor itself and transmitted digitally. Digital signals are much more robust against electrical interference and moisture; therefore, the transmitter always receives reliable measurements.

## **Pre-batch sensor diagnostics**

ISM sensors predict their own maintenance. Using historical data on the affects of exposure to process environments, a sensor can calculate when it will next need to be cleaned, calibrated, or replaced. This means that before a batch starts, a sensor can be checked to ensure it will operate reliably throughout the run.



Improved batch-to-batch consistency

# Easy Sensor Handling

ISM sensors provide a level of ease of handling that is not possible with analog sensors. Now you can prepare a supply of pre-calibrated probes ready for error-free exchange at the process.

## **Sensor calibration away from the process**

iSense is partnering PC software for ISM sensors. Among its most useful functions is sensor calibration. Instead of having to calibrate sensors at the process, this can now be done more securely and more accurately in a convenient location such as a lab. And because the calibration data is retained on

the sensor, you can build up a supply of pre-calibrated probes.

## **Plug and Measure start up**

When a pre-calibrated ISM sensor is connected to the transmitter, calibration data is automatically uploaded and the transmitter configures itself appropriately without any operator intervention.

# Convenient lifecycle management



# Simplified Compliance

ISM alleviates the workload of meeting regulatory requirements, through comprehensive electronic documentation and simpler SOPs.

## **Electronic documentation**

iSense records the history of ISM probes from first installation until they are discarded, including calibration information. iSense's electronic logbook allows control and tracking of all sensor activities ensuring complete documentation of ISM sensors over their lifetime.

## **Simpler SOPs**

Sensor-related SOPs are simpler with ISM. For example, ISM sensors have a built-in SIP/CIP counter that can be set to meet your SOP requirements. Once the counter reaches zero an alarm is raised and the sensor can be replaced. Now you no longer have to rely on written records.



Full traceability made easy



# ISM Solutions

METTLER TOLEDO offers an extensive range of analytical measurement solutions with ISM.

## **A system for your process ...**

In-line solutions for up- and downstream bioprocesses, chemical synthesis, pure water production, Clean-in-Place/Sterilization-in-Place systems, and wastewater monitoring all benefit from the greater process reliability, simplified maintenance and easier

regulatory compliance that ISM provides.

## **... adaptable to your requirements**

Our ISM transmitter portfolio covers single-parameter, single-channel units for greater process safety, to multi-parameter, multi-channel devices for convenience and flexibility.

Incorporating ISM systems into your control system via transmit-

ters or converters allows seamless integration of sensor diagnostics information for remote monitoring.

## **Wide parameter range**

ISM solutions are available for the following parameters:

- pH
- Dissolved O<sub>2</sub>
- Dissolved CO<sub>2</sub>
- Conductivity
- Dissolved Ozone
- TOC



For more information:

▶ [www.mt.com/ISM-pharma](http://www.mt.com/ISM-pharma)

**METTLER TOLEDO**

The logo graphic consists of a series of parallel, slightly curved lines that create a sense of depth and movement, resembling a stylized 'M' or a series of steps. The lines are colored in a gradient from light green to a darker green, with a central point where the lines converge.