Process Instrumentation, Process Analytics, Weighing Technology

Siemens – The One-Stop Shop
Issue September 2009

Process Automation

Answers for industry.

SIEMENS

Content

Complete packages for field instrumentation and process analytics

- Pressure, temperature, flow, and level transmitters
- Positioners for pneumatic linear and part-turn actuators
- Process controllers and process recorders
- Gas chromatographs and gas analyzers
- Components for weighing systems, including belt scales, weighfeeders, and solids flowmeters
- Instrumentation for process monitoring
- Communication and software for control, maintenance, and diagnostics

Integrated engineering and standardization for field instrumentation and complete solutions for process analytics.

Process Instrumentation

Introduction

Complete profitable solutions with optimized process instrumentation and process analytics

Competitive advantage in the process industry relies on the ability to make processes faster, more flexible, more efficient and, above all, more cost effective. Siemens is your partner integrating business processes across all levels, and helping you create your competitive advantage. Decades of experience in the measurement, analysis, and control of industrial processes form the foundation of unsurpassed expertise in all areas of process engineering. We are the global market leader in the process gas chromatography, level measurement, and positioners sectors.

Through continuous innovation and improvement of our product portfolio, we offer you reliable and profitable solutions for every process automation application. Whether the application requires individual customized products or a complete system solution – our field-proven "Totally Integrated Automation" platform means full integration into data management, communications, configuration and programming.

You can benefit from the versatility of our complete solutions for your process application, as well as from the openness of the systems. Thanks to the standard PROFIBUS, FOUNDATION Fieldbus or HART® communications interface, leading to the easy integration of existing and future components. Add to this our comprehensive services, including planning and competent technical consulting, commissioning and support in certification procedures, and maintenance and in-depth operator training. In short, Siemens is your one-stop partner for field instrumentation and analytics.

Process Analytics

Weighing Technology

Industries

In the field of process instrumentation, process analytics and weighing technology, Siemens focuses on a number of key industries such as:

- Chemical
- Pharmaceutical

- Water/wastewater
- Mining, aggregates, cement

- Oil and gas/hydrocarbon processing
- Pulp and paper

- Food and beverage
- Marine

Process Instrumentation

Siemens offers a comprehensive range of process instruments for pressure, temperature, flow and level measurement. Pneumatic valve positioners, process controllers, process recorders and process protection devices complete the package. Whether you need a single instrument or a complete instrumentation package, Siemens is your professional supplier for any project.

MPS series

Z series

P250

ZD series

Compact series

Compact series

Pressure Measurement Instruments

SITRANS P comprises a complete range of instruments for measuring gauge, differential and absolute pressure. In addition to high measuring precision and ruggedness, defining features include the convenience and functionality of the modular system as well as the perfect safety concept. We have a proven range of products for all pressure applications.

Overview of the SITRANS P range:

SITRANS P MPS

Convenient hydrostatic level measurement.

SITRANS P transmitter, MPS series, is used for hydrostatic level measurements. It is immersed in the measured medium connected by a cable. The sensor has a stainless steel enclosure and is suitable for applications ranging from drinking water to corrosive liquids.

SITRANS P Z

The single-range transmitter for gauge and absolute pressures.

Two types of pressure sensor are used in the Z Series: a stainless steel sensor and a sensor with ceramic diaphragm. An option for the Z Series meets the requirements of the compressor and pump industry by using a brass enclosure.

SITRANS P250

Single-range transmitter for differential pressure.

The differential pressure will be detected with a ceramics sensor and transformed into an output signal of 4 – 20 mA-, 0 – 5 V- resp. 0 – 10 V. The version with 0 – 10 V output signal can be connected directly to the LOGO!24 process controller.

SITRANS P ZD

Transmitter with digital display and stainless steel enclosure.

The SITRANS P ZD digital pressure transmitter is provided with a display and a 10:1 turndown. The enclosure and the process connection are stainless steel. The digital display is available either radially or axially to the process connection.

SITRANS P Compact

For the special requirements of the food and beverage, pharmaceutical and biotechnology industries.

The increased hygiene demands are satisfied by a range of stainless steel process connections. Cleaning and sterilization procedures (CIP, SIP) are standard practice.

SITRANS P300

The SITRANS P300 offers measuring precision and ruggedness, and advanced operation. The SITRANS P300 was designed for the food and beverage industry as well as pharmaceutical processes. It is an integral component of the SITRANS P family because of its measurement deviation of less than 0.075 %, a hygienic stainless steel housing with lasered rating plate, and the proven SITRANS P DS III local operating philosophy.

The SITRANS P300 meets the requirements of the EHEDG, FDA and 3A. This makes it ideal for applications in the food and pharmaceutical industries.

You can read the process data via a HART, PROFIBUS PA or Fieldbus FOUNDATION protocol. The SITRANS P300 is also available combined with absolute or relative pressure measuring cells with flush mounted diaphragms. The range of process connections are available for the food and beverage, pharmaceutical, and paper industries, including threaded and flanged versions.

SITRANS P DS III

Digital transmitters with integral diagnostics function, HART, PROFIBUS PA or Fieldbus Foundation communication, and convenient key operation. Within a range from 1 mbar to 400 bar, the SITRANS P DS III works well even with extreme chemical and mechanical loads or electromagnetic influences. It offers additional safety functions such as plant and self-monitoring, fault diagnostics and provides maintenance messages advising when the next calibration is due. The self-test function is unique for fail-safe operation. Measuring cells can be quickly and easily replaced so that on-site repairs are fast, simple and cost-effective. In addition to convenient local operation, SITRANS P transmitters can be connected to networks using the PROFIBUS PA, Foundation Fieldbus, or HART protocol.

SITRANS P DS III is designed for nominal pressures up to PN 420. The wetted parts are available in stainless steel, Tantalum, Hastelloy®, Monel®, or gold plated. Explosion-proof versions are also available. The high safety level is documented by globally recognized certificates, including ATEX, SIL, CENELEC, FM, CSA, NEPSI. It is tested according to the NAMUR guidelines. Many different versions of remote seals are available.

Adjust the zero, span, damping and other functions using three pushbuttons and the large, freely-programmable display. The versatility required for every application is integral in the SITRANS P. Whether manual or HART operation, or operation via SIMATIC Process Device Manager (PDM), everything is possible.

Remote seals

The measuring possibilities of the SITRANS P line are extended by a wide range of remote seals. These seals are used when measuring hot, corrosive, highly viscous, or crystallizing material. The following types of remote seals are available:

- Flanges according to EN, ASME, and other connections, either rigid connection to the transmitter or via flexible capillary.
- Various filling liquids for temperatures of material up to 400 °C (750 °F).
- Various diaphragm material options.
- Special versions specific to each industry.

DS III series

P300 series

Remote seals

Hastelloy® is a registered trademark of Haynes International.
Monel® is a registered trademark of Special Metals Corporation.

SITRANS TH100

SITRANS TH200/300/400

SITRANS TW

SITRANS TR200/300

SITRANS TF

SITRANS TF2

Temperature Measurement Instruments

The instruments in the SITRANS T line are true temperature measurements, even under extreme conditions. Whether high or low temperatures or hazardous areas, the SITRANS T with communications capability can meet all demands in a wide variety of industries.

Whether you require a sensor, head, rail or field-mounted transmitter, or a complete measuring station – we can offer you this individually or as a complete package. The cost-effective SITRANS T transmitters can measure accurately in any application, and can be connected simply and rapidly to thermocouples or resistance thermometers. You can set the parameters using the intelligent SIMATIC PDM software package in no time at all, and without input errors. The following units are available:

Transmitters for head-mounting

SITRANS TH100

Pt100 transmitter. Low-cost and compact, configurable using PC (SIPROM T).

SITRANS TH200

Universal transmitter, configurable using PC (SIPROM T). Cost-saving service features.

SITRANS TH300

HART universal transmitter, configurable using SIMATIC PDM or HART protocol. Cost-saving service features. Diagnostics and simulation functions, remotely or locally.

SITRANS TH400

Fieldbus transmitter in designs for PROFIBUS PA or FOUNDATION Fieldbus.

Configurable using SIMATIC PDM (PA) or AMS (FF). Comprehensive diagnostics and simulation functions, transmission of important device and process data over the bus cable.

Transmitters for rail-mounting

SITRANS TR200

Universal transmitter programmable via PC (SIPROM T). Cost-saving operational functions and diagnostics LED.

SITRANS TR300

HART universal transmitter configurable via SIMATIC PDM or HART protocol. Cost-saving operational functions and diagnostics LED. Remote or local diagnostics and simulation.

SITRANS TW

Universal transmitter for rail-mounting with HART communication, comprehensive diagnostics and simulation functions, configurable using SIMATIC PDM, optional limit value relay.

Transmitter for field-mounting

SITRANS TF

Transmitter for mounting in the field where excessive heat or vibrations are present at the measuring point; IP68 degree of protection, programmable, HART, optional programmable digital display. Can also be used as remote display without transmitter for any 4 to 20 mA signal.

SITRANS TF2

Digital display thermometer

Combines a Pt100 sensor with a 4 to 20 mA transmitter and digital display. Stainless steel enclosure with IP65 degree of protection includes simple configuration using three pushbuttons with no additional software required.

All transmitters are also available in intrinsically safe versions; the SITRANS TF is Ex d certified.

Temperature sensors

Selection of the correct temperature sensor.

Many resistance thermometer and thermocouple designs are available for use in the process industry. The materials, process connections, construction and accessories are appropriate for a wide range of process applications. Furthermore, our process engineers can help you select appropriate materials for protective/neck tubes or mounting types.

- For piping and tanks.

Resistance thermometers for threaded, welded, or flange connection. Available with various protective tubes and solid barstock for maximum stress conditions.

- For combustion plants and furnaces.

Straight thermocouples and flue gas resistance thermometers.

- For applications with high sanitary requirements according to EHEDG recommendations.
  - Resistance thermometers for installation in pipelines with hygienic process connections.
  - Clamp-on resistance thermometers can be retrofitted without interfering with process operation, no dead volume.
- For rooms with high humidity.

Room temperature sensor of Pt100 design.

- For limited installation conditions.

Jacket thermocouples with attached cable, plug or connection head.

- Accessories.

Measuring inserts and connection heads for your spare parts strategy.

Do you have a specialized application?

In the industrial temperature measuring sector, applications exist which require adapted devices. We will be pleased to help you with individual solutions.

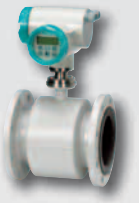
Resistance thermometers for pharmaceutical, food and beverage and biotechnology applications

Sensors for combustion plants and furnaces

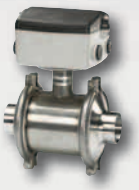
Sensors for pipelines and tanks

Flow Measurement Instruments

MAG 5100 Water



MAG 3100/6000 Industry



MAG 1100 F

MAG 8000 Battery Water meter

TRANSMAG 2

Choosing the right flowmeter for the right application can dramatically improve your bottom line. In all industries, Siemens offers a comprehensive selection of electromagnetic, coriolis, ultrasonic, vortex, rotary pistol and differential pressure flowmeters suitable for meassuring a variety of liquids.

SITRANS F M – Electromagnetic flowmeters

SITRANS F M flowmeters measure the volume flow of electrically-conductive fluids. Water, chemicals, food and beverage, slurries, sludge, paper stock, and mining slurries with magnetic particles are measured using SITRANS F M. The product range is divided into three types of electromagnetic meter:

Standard pulsed DC magnetic flowmeter, SITRANS F M DN 2 to DN 2000 (1/12" to 78").

- Full transmitter program MAG 5000/ MAG 6000/MAG 6000 I Ex compact or remote mounting.
- Variety of inputs and outputs and bus communication modules; PROFIBUS PA/DP, FOUNDATION Fieldbus, HART and Modbus® RTU.
- MAG 1100/1100 HT sensor for general process industries.
- MAG 1100 F sensor for food and beverage and pharmaceutical industries.
- MAG 3100/MAG 3100 HT sensor for general process industry.
- MAG 3100P designed for process industry and the harsh requirements in the chemical industry.
- MAG 5100 W sensor designed for water and wastewater applications.

Battery-powered electromagnetic water meter, MAG 8000 DN 25 to DN 1200 (1" to 48").

Designed for the water industry, the MAG 8000 program is a battery-powered solution that makes it easier than ever to install a reliable water meter virtually anywhere.

- Drinking water approvals.
- MI 001 EU Approval.
- OIML R49 type approval.
- Battery lifetime up to 6+ years.
- Mains powered 24 V AC/DC, 115 V AC/ 230 V AC with battery backup.
- IP68 (NEMA 6P) enclosure for sensor and transmitter in compact or remote version.

High power electromagnetic alternating field flowmeter, TRANSMAG 2 DN 15 to DN 1000 (1/1" to 40").

Specially designed for heavy mining slurries with or without magnetic particles as well as the most difficult applications in the pulp and paper industry.

- A wide choice of corrosion-resistant liner materials.
- Heavy duty industrial enclosure.
- No movable parts.

SITRANS F C – Coriolis mass flowmeters

The SITRANS F C coriolis mass flowmeters measure the direct mass flow rate of liquids and gases in almost any application without special calibration.

It is a multivariable device delivering reliable information on mass flow, volume flow, temperature, density and concentration (e. g. Brix or Baume).

Flexibility and high performance with the MASS 6000 Coriolis transmitter

The flexible MASS 6000 transmitters, designed for high performance, easy operation ensuring a low cost of ownership.

- Variety of transmitter enclosures.
- Multiple I/O as standard and communication modules PROFIBUS PA/DP, FOUNDATION Fieldbus, MODBUS RTU and HART.
- SENSORPROM facilitating true plug and play.
- Advanced diagnostics for easy service.
- Fast signal processing enabling high speed batching.

Seamless integration with the SIFLOW FC070 Coriolis transmitter

SIFLOW FC070 is a true multi-parameter coriolis transmitter ready for quick installation and system integration. SIFLOW FC070 is the most compact, space-saving and versatile transmitter available.

- Direct integration into SIMATIC S7 automation system.
- Standardized user interface – SIMATIC Manager, PCS7 and SIMATIC PDM.
- Compatible with the complete range of SITRANS F C coriolis sensor.
- Stand-alone functionality or third party PLC integration.
- Ultra compact space saving design in SIMATIC 40 mm standard module.

Sensors meeting the toughest challenges

Optimum meter performance is achieved through an intelligent sensor design with a strong focus on safety, repeatability, and quality, enabling a high accuracy 0.1 % of rate with a large turndown range. Sensor capacity ranges from few g/h to 510,000 kg/h (few lb/h to 1,124,300 lb/h), covering applications ranging from mini-plants to bulk loading.

The SITRANS F C sensors offer:

- Multi-plug connector for plug and play installation.
- Wide choice of process connections.
- Wetted parts available in stainless steel or Hastelloy.

MASS 2100 DI 1.5
0 to 65 kg/h (0 to 143 lb/h):

Ideal for low flow applications measuring liquid or gas.

FC300 DN 4
0 to 350 kg/h (0 to 772 lb/h):

Low flow sensor with focus on compactness and integration.

MASS 2100 DI 3 – DI 40
0 to 52,000 kg/h (0 to 114,600 lb/h):

Medium range sensors for general purpose applications.

Standard MC2 DN 50 – 150 and Hygenic version DN 20 – 80
0 to 510,000 kg/h (0 to 1,124,300 lb/h):

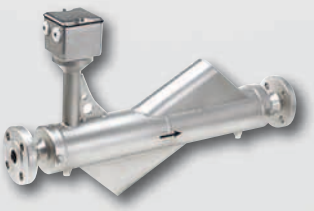
Large sensors offering ideal fit between size and maximum flow capacity.

SIFLOW FC070

MASS 2100 DI 1.5

SITRANS FC300

MASS 2100 and MASS 6000 Exd



MC2 Standard

Flow Measurement Instruments

SONO 3300 Industry

SONOKIT

SITRANS FUE380

SITRANS FUP1010 Clamp-on

SITRANS FUS1010 Clamp-on

SITRANS F US – ultrasonic flowmeters

SITRANS F US ultrasonic flowmeters are available as in-line and clamp-on versions. Both meter types can be used with homogeneous conductive and non-conductive liquids and gases (only clamp-on). In addition to standard volume flow, they can also provide information on media quality and temperature. Meter calibration can be certified to industry standards.

In-line ultrasonic flowmeters

Ultrasonic in-line flowmeters are suitable for industrial applications with pipe sizes ranging from DN 50 to DN 1200 (2" to 48"). Full 2 and 4-track sensors are available in combination with the SITRANS FUS060 transmitter.

- Option between mild and stainless steel sensors.
- Transducers can be exchanged without interrupting operation.

Retrofit flowmeter type, SONOKIT

The SONOKIT system up to DN 4000 (160") is designed for in-line retrofitting on all existing pipelines as a 1-track or 2-track flowmeter. The unique design enables installation on empty pipes or pipes under pressure without process shut-down.

- Robust version can be buried and withstands constant flooding.
- Outstanding accuracy; the bigger the pipe, the more accurate the result.

For the utility industry the 2-track flowmeters, SITRANS FUS380 and FUE380, are designed to measure water flow in district heating plants, local networks, boiler stations, substations and other general water applications.

- Custody transfer approvals for district heating custody transfer applications.
- Battery or mains power enables installation where needed. Battery lifetime is 6+ years.

Clamp-On ultrasonic flowmeters

Ultrasonic clamp-on flowmeters provide highly accurate liquid and gas flow measurement. The external transducers can quickly and easily be installed on the outside of the pipes ranging from DN 6 to DN 9140 (0.25" to 360") in size.

Clamp-on ultrasonic flowmeters are available in six different families dedicated to each of their main industry:

- SITRANS FUS1010 for general applications
- SITRANS FUP1010 for portable meter
- SITRANS FUE1010 for energy
- SITRANS FUH1010 for hydrocarbon
- SITRANS FUG1010 for gas
- SITRANS FUS1020 for water and wastewater

In addition, the SITRANS FUE1010 and SITRANS FUP1010 are available as kits that come in a sturdy suitcase, containing all equipment necessary for performing flow measurement tasks. These kits are ideal for check metering of existing applications regardless of measurement technology or applications with no metering.

All clamp-on meters are characterized by easy installation with no need to cut pipe or stop the flow, minimal maintenance thanks to external transducers that do not require periodic cleaning, excellent accuracy and repeatability, no moving parts to wear or foul, and no pressure drop or energy loss.

SITRANS F X – Vortex flowmeters

SITRANS F X Vortex flowmeters provide accurate standard volumetric and mass flow measurement of steam, gases, conductive and non-conductive liquids. The Vortex flowmeter functions as an "All-in-one-solution" with integrated temperature and pressure compensation.

It is specially designed for applications that require reliable flow measuring independent of pressure, temperature, viscosity and density. This makes it perfectly applicable in especially the chemical industry, HVAC & power, food & beverage, oil & gas and pharma.

The SITRANS F X Vortex flowmeter is available as flanged or sandwich version in the following configurations:

SITRANS FX300 single converter
is available as a volumetric and mass flowmeter:

- Volumetric flowmeter. Measurement of steam, gases and conductive and non-conductive liquids.
- Mass flowmeter. Measurement with temperature sensor for saturated steam compensation as standard feature. Option with a pressure and integrated temperature sensors for compensation of gases, wet gases, mixtures or steam.
- Option within pressure sensor is the isolation valve allowing the pressure sensor to be shut off for the purpose of pressure and leak testing of the pipeline or for being exchanged without interrupting the process.

SITRANS FX300 dual converter
is available as a volumetric and mass flowmeter:

- Dual measurement for twofold reliability.
- Redundant system with two independent sensors and two converters.
- Optimally suited for measurements in multi product pipelines.
- Each converter can be individually programmed for the given product.
- Measurement with temperature sensor for saturated steam compensation as standard feature.

OCM III – ultasonic flow controller

High accuracy for open channel flow monitoring in water/wastewater and plant effluent applications. Non-contact Echomax series ultrasonic transducers are used to complete the control system.

SITRANS F R – rotary piston meters

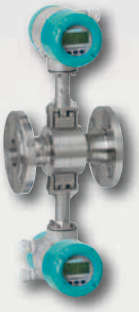
Used to measure the volume flow of conductive and non-conductive liquids. High viscosity media, acids and alcohol-based concentrates are accurately recorded. Even measurements subject to calibration standards can be undertaken. No inflow and outflow runs required.

SITRANS F O – differential pressure flowmeters

Universal flow measurement for liquids, gases and vapors. Always provide accurate results even with large bores, high temperature and extreme pressure.

SITRANS FX300
Single converter, flange with isolation valve

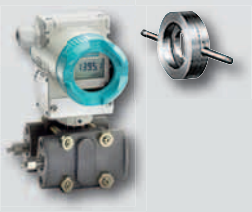
SITRANS FX300
Single converter, sandwich



SITRANS FX300
Dual converter, flange

OCM III

SITRANS F R

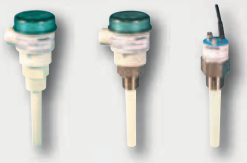


SITRANS F O

SITRANS LPS200

SITRANS LVL100/200

SITRANS LVS100/200



Pointek CLS100

Pointek CLS200

Pointek CLS300

Pointek CLS500

Level Measurement Instruments

Siemens level measurement instruments serve process industries worldwide, including water and wastewater, aggregate, cement, mining, dry-bulk storage, chemical, petrochemical, oil and gas, food and beverage, and pharmaceutical. A wide portfolio of technologies and products lets you choose the right solution for your application.

POINT LEVEL DETECTION

Electromechanical

Siemens rotating or vibrating point level switches are a cost-effective solution for solids and liquids applications. Their robust design lasts in harsh and abrasive environments. They detect high, low, and demand levels in solids and liquids applications, specializing in low bulk density applications. Standard aluminum enclosures and stainless steel process connections provide exceptional resistance to mechanical forces, long service life, and low cost of ownership.

- SITRANS LPS200 rotary paddle switch detects solids with densities as low as 15 g/l (0.94 lb/ft³).
- SITRANS LVL100 and LVL200 vibrating liquid level switches for high, low, and demand level alarms and pump protection.
- LVS100 and LVS200 vibratory switch detects solids with densities as low as 5 g/l (0.3 lb/ft³).

Ultrasonic

Pointek® ULS200 is an ultrasonic level switch with two switch points, effective in bulk solids, liquids, and slurries, and is ideal for sticky materials.

Capacitance

Siemens Pointek inverse frequency shift capacitance point level switches provide accurate, reliable, and repeatable measurement in dusty, turbulent, and vaporous environments or applications with product buildup. Small changes in level create large changes in frequency. As a result Pointek devices have greater sensitivity and consistently outperform conventional devices. With their robust aluminum enclosures and process connections, Siemens Pointek switches are proven superior performers even in tough bulk solids applications.

- Pointek CLS100 – compact 2-wire switch for level detection in constricted spaces, interfaces, solids, liquids, slurries, and foam.
- Pointek CLS200 – versatile switch for detection of liquids, solids, slurries, foam, and interfaces.
- Pointek CLS300 – level switch for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present.
- Pointek CLS500 – level switch for critical conditions of more extreme temperatures and pressures.

CONTINUOUS LEVEL MEASUREMENT

Sonic Intelligence® and Process Intelligence

Our patented Sonic Intelligence and Process Intelligence signal processing technologies were developed using knowledge provided by our field service engineers and data from devices installed in real applications. Siemens instruments offer the unique advantage of this technology. Both signal processing technologies differentiate between true echoes from the material and false echoes from obstructions or electrical noise. The sophisticated software is continually updated and supported by field data gained from more than a million applications. This in-depth knowledge and experience is built into the software's advanced algorithms to provide intelligent processing of echo profiles. The result is a repeatable, fast and reliable measurement you can trust.

Radar

Even in harsh process conditions, Siemens radar transmitters are virtually unaffected. Non-contacting radar technology means low maintenance and provides reliable continuous level measurement for short- to long-range applications.

Siemens offers a variety of radar instruments. Process Intelligence signal processing software ensures reliable and accurate level measurement and features Auto False-Echo Suppression, a technique that can automatically detect and suppress false echoes from vessel obstructions. This ensures high performance and is easy to implement, using just a few parameter entries on the infrared handheld interface or via SIMATIC PDM.

- SITRANS Probe LR – 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage vessels with nominal pressure and temperature, to a range of 20 m (66 ft).
- SITRANS LR200 – 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft).
- SITRANS LR250 – 2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft). Ideal for small vessels and low dielectric media.
- Sitrans LR260 – 2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of solids in silos to a range of 30 m (98.4 ft). Ideal for applications with extreme dust and high temperatures to 200 °C (392 °F).
- SITRANS LR400 – 4-wire, 24 GHz FMCW radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and high pressure, to a range of 50 m (164 ft). Ideal for low dielectric media.
- SITRANS LR460 – 4-wire, 24 GHz FMCW radar level transmitter for continuous monitoring of solids in vessels to a range of 100 m (329 ft). Ideal for applications with extreme dust and high temperatures to 200 °C (392 °F).

SITRANS Probe LR

SITRANS LR200

SITRANS LR250

SITRANS LR260

SITRANS LR460

Level Measurement Instruments

SITRANS Probe LU

MultiRanger controller

Echomax non-contracting transducers

SITRANS LUC500

SITRANS LG200

Ultrasonic

Siemens is the world leader in ultrasonic level technology. The SITRANS Probe LU is a reliable compact transmitter solution offering a level or flow output. For advanced control solutions integrators are available with remotely mounted non-contacting ultrasonic transducers. Whether you select the transmitter or the controller you get a cost-effective non-contacting solution for a wide range of applications in virtually any industry.

- SITRANS Probe LU – 2-wire, loop powered ultrasonic transmitter for level/volume/flow monitoring of liquids in storage vessels, simple process vessels, and open channels.
- MultiRanger® – Versatile short- to medium-range single- and multi-vessel controller for applications up to 15 m (50 ft).
- HydroRanger 200 – Level controller for up to 6 pumps including pump control, differential control, and open channel flow monitoring.
- SITRANS LUC500 – High-end duplex lift station controller for the water/wastewater industry.
- SITRANS LU series – Long range level monitoring of liquids and solids, measuring up to 10 points to a range of 60 m (200 ft).

Rugged Echomax® transducers are built for harsh environments. They are impervious to dust, moisture, corrosion, vibration, flooding, and extreme temperature. They are easy to install and virtually maintenance-free.

Guided Wave Radar

Guided wave radar uses Time Domain Reflectometry (TDR) to measure level by guiding an electromagnetic pulse down a probe (solid steel rod, steel cable or coaxial cable) toward the material. When the pulse reaches the material surface, the change in dielectric value between air and the material causes a portion of the pulse to reflect back toward the transmitter. Guided wave radar is unaffected by vapor, density, foam, dielectric fluctuations, temperature, and pressure changes, and works well for short and medium-range measurements.

- SITRANS LG200 – Advanced loop-powered, guided wave radar level transmitter for liquids, slurries, interface and bulk solids with a dielectric of 1.4 and higher. The wide selection of models and echo-processing software ensure reliable measurement in liquids with corrosive vapors, foam, saturated steam, high viscosity, surface agitation, high fill/empty rates and varying dielectric or density.

Capacitance

Our unique inverse frequency shift approach to capacitance technology ensures accurate, reliable, and repeatable measurement, even in dusty, turbulent, and vaporous environments, or in situations with product buildup. Because even a small level change creates a large change in frequency, our instruments provide better resolution and consistently outperform conventional devices. With special features such as tip-sensitive probes, Active-Shield technology, and modular probe options available on various models, they offer practical solutions to a wide variety of point level, continuous level, and interface applications.

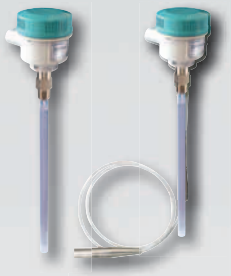
- SITRANS LC300 is an inverse frequency shift capacitance continuous level transmitter for liquids and solids applications. It is ideal for standard and industrial applications in chemical, hydrocarbon processing, food and beverage, mining, aggregate and cement industries. Patented Active-Shield technology protects the measurement from the effects of moisture, vapors, foam, temperature or pressure variations, and material buildup.
- SITRANS LC500 is an inverse frequency shift capacitance level or interface transmitter with active shield for critical applications, such as high-pressure coalescers, FPSO ships, LNG processing plants, and offshore oil and gas platforms. It performs in liquids, solids, interfaces, and foam and is unaffected by vapors, product deposits, dust, or condensation and is highly resistant to toxic and aggressive materials. SITRANS LC500 is the right solution if you're looking for high-precision level or interface measurement under extreme conditions.

Hydrostatic

Low-cost level measurement for direct mounting or mounting with remote seals on tanks and vessels. SITRANS P MPS and SITRANS P DS III can handle extreme chemical and mechanical loads as well as electromagnetic interference. They are widely applied in the chemical and petrochemical industries.

Gravimetric

Gravimetric level measurement with SIWAREX weighing technology offers highly precise measurement without material contact independent of medium temperature, tank shape, built-in parts and material characteristics.



SITRANS LC300

SITRANS LC500

SITRANS MPS

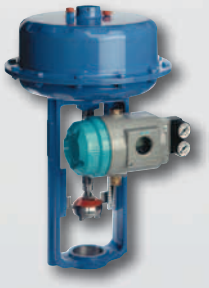
SITRANS P DS III

SIWAREX U

SITRANS VP300
mounted at part-turn actuator

SITRANS VP300
mounted at linear actuator

SIPART PS2
mounted at linear actuator



SIPART PS2 (EEx d)
mounted at linear actuator

Positioner

Positioners from Siemens have been guaranteeing safe and trouble-free operation around the globe for more than 15 years. They accurately control every valve type and process, while handling special tasks with perfect reliability. We continually develop our product range to satisfy your exacting specifications and demands that your process requirements place on positioners.

Our range of intelligent electropneumatic positioners for linear and part-turn actuators is represented by the names SITRANS VP300 and SIPART PS2. These two product models optimally cover every application. Regardless of application; safe control of valves in chemicals and oil & gas, or precise control in pharmaceuticals or food; we offer the positioner solution for every valve. These include the most widely used electropneumatic positioner, SIPART PS2. The new SITRANS VP300 opens even more applications for our family of intelligent positioners. Whether a proven device or a new one – the fundamental features of our positioners are always the same: comprehensive functionalities, diagnostics capability, simple assembly, and fast commissioning. The result is also always the same: with Siemens positioners, processes are completely safe and reliable.

SITRANS VP300

SITRANS VP300 is our newest addition to the family. It supplements our range of positioners for use in hostile environments, and with compressed air, which is frequently moist or contaminated. Innovative features such as non-contacting position detection and rugged mechanical connection via an OPOS interface not only mean that the SITRANS VP300 is particularly resistant to vibration, but also permit simple and fast assembly with just two screws.

- Standard aluminum enclosure to IP66/ NEMA 4x protection.
- Non-contacting position detection (GMR effect).
- Rapid assembly through innovative OPOS interface.
- Simple operation using graphic display and menu prompting.
- Plain text in several languages.
- SIL-certified partial stroke test.

SIPART PS2

SIPART PS2 is currently the most widely used positioner for linear and part-turn actuators in a wide range of process industries. This is not without reason. The proven all-round design has a particularly flexible stroke range, intelligent diagnostics, and different communication protocols.

What has been proven so often is certainly the correct choice.

- Versions with external non-contacting travel sensors.
- High flexibility in the stroke range from 3 to 200 mm (0.1 to 7.9 inch) (more on request).
- Communication via PROFIBUS PA, FOUNDATION Fieldbus or HART.
- EExD explosion-proof version.
- SIPART PS2 is available in Macrolon, aluminum and stainless steel casings.
- SIPART PS2 prevents the closing of fittings during the solenoid valve test, or monitors open/close fittings as an “intelligent solenoid valve”.

Extended online diagnostic

The following valve and actuator failures can be detected.

- Friction and clogging of a valve.
- Pneumatic leakage (e. g. tear in actuator membrane).
- Growing deposits in a pipeline or tear of valve plug for continuous processes.
- Wear and tear of valve seat or valve plug.
- Deposits or incrustations on valve seat or valve plug.
- Stiction of stuffing box.
- “Partial Stroke Test“ (PST) for open/close valves (e. g. safety valves, ESD) and control valves.

Process Protection

Detect to protect your process. Detect flow problems, blockages, screen faults, cavitation in pumps, or burst filter bags. Process protection devices can be an early warning system to avoid costly process interruptions and breakdowns of equipment. Rugged construction makes them impervious to dust, dirt, buildup and moisture.

MOTION SENSORS

Non-contacting and motion sensors detect changes in motion and speed of conveying, reciprocating and rotating machinery.

Milltronics® MFA 4p with MSP or XPP probes

This sensitive, single-setpoint motion sensor system can be used even in hazardous, high temperature, and harsh conditions because of its superior sensing probe design. The system protects equipment by detecting absence of motion, as well as underspeed or overspeed conditions.

Milltronics Millpulse 600

This heavy-duty 2-wire motion sensor provides a solid state switch output to PLCs when monitoring speed of rotating, reciprocating or conveying equipment.

Milltronics ZSS

This heavy-duty, zero-speed alarm switch detects absence or presence of motion of rotating, reciprocating or conveying equipment.

ACOUSTIC SENSORS

Acoustic sensors for pump monitoring

Even the smallest leakages on delivery valves of oscillating positive displacement pumps (e. g. piston pumps) can be detected by measuring cavitation. The acoustic diagnostic device SITRANS DA400 consists of cavitation sensors and an analyzer unit which supplies the sensors with electrical energy and detects, filters and evaluates the measured signal and outputs an alarm signal on exceeding a defined limit value.

Acoustic sensors for material flow monitoring

The SITRANS AS 100 acoustic sensor detects high frequency acoustic emissions from friction or the impact of dust, powders, granules and other solids in motion. It signals flow/no flow or high/low flow. It features compact stainless steel construction for harsh environments and non-invasive mounting. The SITRANS AS 100 can be connected to a SITRANS CU 02, which processes signals from the sensor, providing relay and analog outputs for connection into a process, or it can be connected directly to a PLC analog input.

Milltronics Millpulse 600

Milltronics ZSS

Milltronics MFA 4p with MSP or XPP probe

SITRANS DA400

SITRANS CU 02

SITRANS AS 100

Process Controllers

Installed in more than 250 000 control applications in industrial processes and in mechanical and systems engineering and other areas, the SIPART DR series is your solution for process control. The compact controllers with continuous output signal or step contact output have been designed especially for space-saving panel mounting.

SIPART DR19

SIPART DR21

SIPART DR22

SIPART DR24

SITRANS RD100/200
Remote Digital Displays

Apart from their reliability, SIPART DR controllers excel due to their ease of use. Various software packages are available to make their handling easy and intuitive and to extend their scope of application. The standard version already offers comprehensive controller hardware. It can be upgraded quickly and easily for specific applications with a large number of optional input and output modules. Plug-in modules for communications over RS 232/RS 485 or PROFIBUS DP are also available. The following SIPART DR versions are available for different fields of application:

SIPART DR19

96 x 96 mm (3.8 x 3.8") format, for applications in mechanical and systems engineering, for thermal processes, in the steel and ceramics industry, in paint production, water treatment or bottling plants.

SIPART DR21

The ideal solution with comprehensive display functions for all standard tasks. Various control functions and status messages.

SIPART DR22

Solves complex closed-loop control tasks as single- or dual-channel controller, with additional computing functions in the input range.

SIPART DR24

The unit for all process-specific tasks including mathematical calculations, logic operations, open-loop controls and time-controlled closed-loop controls. Up to four independent control loops.

REMOTE DIGITAL DISPLAYS

SITRANS RD100/200

SITRANS RD100 and RD200 universal remote digital displays make measurement data visible and accessible from a remote location. They can be used with all types of field instruments in varying process conditions, and are easy to set up and program.

Process Recorders

Highly complex processes in industry and research and development emphasize visualization and analysis. The SIREC process recorders offer state-of-the-art solutions for any measurement, monitoring and recording application.

SIREC process recorders are used in many industries, with applications covering all major industries and areas, including environmental protection. Whether the task includes the continuous monitoring of process quantities, plant maintenance, process optimization or troubleshooting, SIREC units offer a full line of solutions. This applies to use of the new SIREC D display recorder and the proven continuous line, dot and hybrid recorders of the SIREC P/L and Variograph series. All SIREC D recorders have a USB and Ethernet port as a standard feature, e. g. for real-time communications over the Internet or intranet.

DISPLAY RECORDERS

SIREC D200

The cost-effective solution with up to 12 general-purpose inputs, 144 x 144 mm (5.7 x 5.7") front panel, 5" color TFT display.

SIREC D300

The flexible solution with up to 16 general-purpose inputs, 144 x 144 mm (5.7 x 5.7") front panel, 5.5" color TFT display.

SIREC D400

The ultimate solution with up to 48 general-purpose inputs, 300 x 300 mm (11.8 x 11.8") front panel, 12.1" color TFT display.

CHART PAPER RECORDERS

SIREC P/PA

Low-cost 6-channel dot recorder with or without alphanumeric printout.

SIREC L/LA

Low-cost recorder with PC interface at front. 1, 2 or 3 analog channels, 2 digital channels, with or without alphanumeric printout.

SIREC PU

Versatile recorder with mathematical functions 6 analog channels, digital display, real-time clock.

SIREC Variograph 3521

3 or 6 analog and 6 digital non-skew measuring channels simultaneously displayed on the same chart.

SIREC Variograph 3590

Up to 12 analog channels plus 6 digital channels, on a wider chart of 210 mm.

SIREC Variograph 3560

Up to 12 analog channels, 6 digital channels, on increased visible chart length, format 288 x 288 mm.

SIREC D200


SIREC D300


SIREC D400

SIREC PU

Complete Solutions

Siemens offers a complete service package to assist you in engineering, designing, supplying, installing and commissioning measurement solutions for complete industrial plants. In addition, we guarantee seamless after-sales service based on user-friendly documentation of the solution and your plant.

Real-world measurement technology from Siemens is a multi-faceted offering. For example, we provide all field instruments from a single source, as requested by many customers. Our "one-stop shopping" approach includes both sensors and actuators. Siemens supports integrated engineering of your complete process instrumentation all the way to integration with your process control system. Additional industrial components and systems integrate seamlessly into the overall plant and ensure smooth process flows.

Overview of our services portfolio:

- Plant engineering and scheduling by an experienced project management team.
- Specialists assist you in the selection and use of the field instruments.
- SIPLAN C/E is state-of-the-art software available for effective plant engineering and order processing. This program is also very useful for providing actual customer documentation.
- Plant documentation comprises:
  - Basic documentation, including device specifications, product and use lists.
  - Higher-level documentation, including plant, process, identification and grounding concepts.
  - Mechanical documentation, including setup and installation diagrams, hookups, cable routings.
  - Electrical documentation, including circuit and wiring diagrams, cable lists.
- Specification and delivery of all required process instruments.
- Intensive preparation for installation.
- Reliable supply of installation material.
- Installation and/or installation supervision.
- Commissioning and/or commissioning supervision.
- Comprehensive after-sales service.

Regardless of the solution we offer you, the focus is always on customer value.

Process Analytics

Siemens is a leading provider of process analyzers and process analysis systems. We offer our global customers the best solutions for their applications based on innovative analysis technologies, customized system engineering, sound knowledge of customer applications and professional support.
And with Totally Integrated Automation, Siemens Process Analytics is your qualified partner for efficient solutions that integrate process analyzers into automation systems in the process industry.

ULTRAMAT 23

CALOMAT 6/62

CALOMAT 6 in field housing

Gas Analyzers

From emission monitoring in waste incinerators and power plants to gas analysis in the chemical industry to rotary kiln monitoring in cement plants, the highly accurate and reliable Siemens analyzers will always do the job.

The technology used in state-of-the-art process analyzers is determined by the needs of the specific application. Devices must be cost-effective, functional, space and energy-saving, and must provide just the right amount of power to meet all needs.

Siemens Process Analytics offers a wide and innovative portfolio designed to meet all user requirements for comprehensive products and solutions.

We combine outstanding expertise in developing high-performance analytical devices with in-depth application knowledge from many process industry applications.

The analyzers operate using a menu structure and in accordance with NAMUR recommendations. The analyzers are easily integrated into the SIMATIC Totally Integrated Automation concept and are programmed using SIMATIC PDM software and PROFIBUS DP and PA interfaces.

PROCESS GAS ANALYSIS – EXTRACTIVE

ULTRAMAT 23

The ULTRAMAT 23 is a cost-effective multicomponent analyzer for the measurement of up to 3 infrared sensitive gases using the NDIR principle plus O_2 using an electrochemical oxygen measuring cell.

The ULTRAMAT 23 is suitable for a wide range of standard applications, such as emission monitoring, furnace optimization, room air monitoring and other applications. Calibration using ambient air eliminates the need to use calibration gases.

SERIES 6

The Series 6 gas analyzers are comprehensive analyzers that meet the full range of requirements:

CALOMAT 6

The CALOMAT 6 19" rack mount or as a field device uses the thermal conductivity method to accurately measure the composition and concentration of process gases. It is primarily designed for the measurement of hydrogen in inert gas concentrations in blast furnace gas and carbon dioxide mixtures.

CALOMAT 62

The CALOMAT 62 applies thermal conductivity detection (TCD) principles and is specially designed for use in applications with corrosive gases such as chlorine. The CALOMAT 62 measures the concentration of gas components such as H_2, Cl_2, HCL or NH_3 in binary or quasi-binary gas blends.

OXYMAT 6

The OXYMAT 6 is an oxygen analyzer, optionally in 19" rack mount or in a robust field housing for installation in harsh environments. The OXYMAT 6 can be used in applications including emission measurements to use in production process control and quality assurance. Due to its ultrafast response, the OXYMAT 6 is perfect for monitoring safety-relevant plants. Its corrosion-proof design also makes the OXYMAT 6 the analyzer of choice for analysis in the presence of highly corrosive gases.

OXYMAT 61

The OXYMAT 61 is a low-cost oxygen analyzer for standard applications. It can use ambient air as a reference gas that is supplied to the analyzer section by the integral pump.

OXYMAT 64

The OXYMAT 64 is a gas analyzer for the measurement of smallest oxygen concentrations in pure gas applications. Air separation plants, production of technical gases, welding in a protective atmosphere – these are just a few examples where the OXYMAT 64, a completion of the well-proven Siemens Series 6 of continuous gas analyzers, reliably detects small traces of oxygen.

ULTRAMAT 6

The ULTRAMAT 6 is an analyzer in 19" rack mount or field housing. Measurement of up to four infrared active components in a single unit is possible. It can be used in all applications from emission measurement to process control, even in the presence of highly corrosive gases.

ULTRAMAT/OXYMAT 6

The Series 6 units can be combined in a 19" rack to form multi-component devices with ULTRAMAT 6 and OXYMAT 6 benches. This provides, with the smallest possible footprint, an infrared channel for the measurement of up to two IR components and a channel for oxygen measurement.

FIDAMAT 6

The FIDAMAT 6 measures the total hydrocarbon content in air or even in high-boiling gas mixtures. It covers nearly all requirements, from the detection of trace hydrocarbon in pure gas analyses to total measurement of high hydrocarbon concentrations, even in the presence of corrosive gases.

Ex-proof designs

An additional purge monitoring unit makes the CALOMAT 6, OXYMAT 6 and ULTRAMAT 6 gas analyzers in field housing suitable for installation in hazardous areas. Measurements can include both non-flammable and flammable gases.

OXYMAT 6/61/64

ULTRAMAT 6

ULTRAMAT/OXYMAT 6

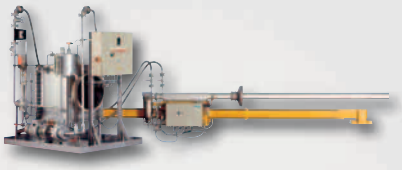
FIDAMAT 6

Series 6 in field housing for use in hazardous areas

Gas Analyzers

LDS 6

SITRANS SL



FLK Gas Sample Probe

PROCESS GAS ANALYSIS – IN-SITU

LDS 6

The robust and reliable LDS 6 in-situ gas analyzer can measure gases even under extreme conditions. Precise and reliable results are obtained even at 1,500 °C (2,732 °F) or where the dust concentration is very high. The LDS 6, for example, measures in-situ concentrations of O_2 (Temp.), NH_3, HCl, HF H_2O, CO or CO_2 in flue gas before and after gas cleaning. Applications in the chemical and petrochemical industries, for steel and metal production, as well as in cement or paper plants are a match for the LDS 6.

SITRANS SL

SITRANS SL sets a new benchmark with in-situ technology for process control – even under extreme measuring conditions. It offers proven technology integrated into a more compact in-situ gas analyzer design.

SITRANS SL combines the benefits of the proven referencing technology – with a direct operating mode as close as possible to the process. An integrated reference cell, filled with a non-interfering gas, which allows laser locking completely independent of process gas concentrations leads to utmost stable operation, negligible drift values and extended maintenance intervals. SITRANS SL designed in a unique and compact design, including a local user interface (LUI) is the perfect solution for single point measurement applications in rough environments.

SITRANS SL is used for process control in the chemical industry, even in hazardous areas due to its EEx d design. Other applications are e. g. process optimization in the steel industry or combustion control in boilers or waste incinerators.

ANALYTICAL APPLICATION SETS

FLK gas sample probe

A specially designed extraction probe for cement rotary kilns with liquid to air cooling. The probe is cooled by means of a special cooling liquid which permits gas temperatures up to 200 °C (392 °F) and therefore lies above the acid dew point of the flue gas. Buildup of condensed products and downtime due to frequent maintenance are prevented.

SERVICE AND MAINTENANCE

SIPROM GA

The SIPROM GA software tool is designed for service and maintenance applications with all process gas analyzers. SIPROM GA can control and monitor all functions of the analyzers as independent or networked units. Integration into the Ethernet permits remote servicing and diagnostics over long distances.

Process Gas Chromatographs

Siemens application experience and innovative technology in the field of process gas chromatography helps us provide exceptional customer solutions. Small, compact, powerful, and cost-effective, MicroSAM is capable of performing accurate measuring tasks in virtually all industrial sectors.

MicroSAM

is the smallest explosion-proof in-line process gas chromatograph made by Siemens. State-of-the-art silicon-based micromechanical components allow miniaturization and increased performance at the same time. And MicroSAM is so easy to use and so rugged and small that it can be mounted right at the sampling point.
Its performance profile is impressive:

- State-of-the-art technology drastically reduces cycle times, providing better information about the process.
- Valveless live sample injection and column switching.
- Multiple detection for verification of the results.
- Synchronicity: multiple analyzers can be connected in parallel for several sample streams, resulting in more information per time unit, a high degree of reliability should one of the systems fail, and easy implementation of redundant systems.
- Cost-effective and compact, saving installation, maintenance, and service costs.

SITRANS CV

A gas chromatograph for reliable, exact and fast analysis of natural gas. The rugged and compact design makes the SITRANS CV suitable for extreme areas of use, e. g. off-shore exploration or direct mounting on a pipeline. Operation of SITRANS CV using CV Control software is simple, clear and fast. The Software "CV Control" has been specially developed for the requirements of the natural gas market, e. g. custody transfer.

MAXUM edition II

is very well suited to use in rough industrial environments and performs a wide range of duties in the chemical and petrochemical industries and in refineries.
A selection of columns and detectors permits highly selective and sensitive analysis of multiple process components.

Benefits of MAXUM edition II:

- Flexible oven concept, temperature-programmable and energy-saving single or dual oven configurations.
- Valveless live sample injection and column switching.
- Parallel chromatography allows division of a single-train chromatograph analysis into multiple single trains.
- Open network with TCP/IP and Ethernet for communication with PCs, other chromatographs or a DCS.

MicroSAM

SITRANS CV

MAXUM edition II

Analytic Solutions

Our customers' requirements drive the solution. We offer you an integrated design covering the sampling point and sample preparation up to complete analyzer cabinets, for portable applications or for installation in a larger analyzer shelter. This includes signal processing and communications to the control room and process control system.

To offer solutions for your application needs, we rely on many years of world-wide experience in process automation and engineering and a collection of specialized knowledge in key industries and industrial sectors.

This ensures you will get Siemens quality from a single source with a function warranty for the entire system. You can rely on this portfolio for:

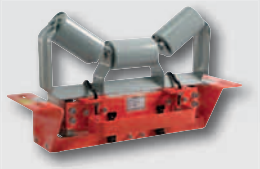
- Customized services and solutions from front-end engineering and design (FEED) up to fully air-conditioned analyzer shelters.
- Support during the approval phase.
- Preliminary and detailed planning with state-of-the-art tools and excellent documentation.
- System assembly and testing in Siemens facilities in the USA, Germany and Singapore.
- Experience with all relevant national and international standards.
- Commissioning by specialists all over the world.
- Tele-maintenance, on-site servicing, spare parts supplies and customized training.

Our references speak for themselves. We would be pleased to demonstrate our expertise!

Weighing Technology

For many years now weighing equipment has been a core technology for ensuring quality and for controlling production processes in nearly every sector of industry. Siemens offers a comprehensive range of weighing products from the fully TIA-compatible Siwarex weighing processor to heavy-duty weighfeeders. The flexible configurability of our products enables everything from simple platform weighing machines to gravimetrical level measurement and highly complex automatic weighing machines to be implemented with minimal modification costs.

Load cells



Belt scales

Solids flowmeters

Weighfeeders

Weighing and Batching Systems

Weighing and batching systems play an important role in all sectors of production and process engineering. The SIWAREX load cells and electronic modules for weighing systems together with Milltronics belt scales, weighfeeders and solids flowmeters provide an optimal weighing system for almost any imaginable task.

Sensors and continuous weighing devices

The load cells and other sensors can be used in a wide variety of sectors. They comply with the requirements of primary industries, and they have also proven their suitability in the food and beverage, chemical and petrochemical industries.

SIWAREX Load cells and mounting elements

Multiple ranges of load cells, suitable for almost any application you can think of. These are the features:

- High accuracy of 3000d according to OIML R60.
- Large measuring range from 3 kg to 280 t (13.2 lbs to 276 tons).
- Hermetically sealed, extremely long service life.
- Suitable for use in hazardous areas.
- Stainless steel or aluminium.
- Smart designed mounting devices for simple and safe installation.

Solids flowmeters

Milltronics flowmeters provide continuous in-line weighing of dry bulk solids, free-flowing powders, or granular material. The sensing heads are external to the process, and produce accurate, repeatable results. These flow-meters may be used for critical functions such as batch load-out and blending.

Belt scales

With a track record for consistent performance in harsh environments, Milltronics conveyor belt scales combine simple, drop-in installation, low maintenance (no moving parts) and repeatable accuracy for productive operations. The unique parallelogram style load cells ensure minimal hysteresis and superior linearity, and ignore all hoizontal forces. All belt scale designs feature overload protection for the load cells.

Weighfeeders

Milltronics weighfeeders provide precision weighing accuracy, improving blend consistencies, accountability, and record keeping. Milltronics Weighfeeders are indispensable when automated production processes require continuous in-line weighing and feeding. These heavy-duty weighfeeders deliver, reliable, and uninterrupted service, and are virtually maintenance-free. From light to heavy-duty applications, Milltronics weighfeeders are engineered to the end-user requirements.

Dynamic weighing integrators

Milltronics BW500, SF500 and Siwarex FTC electronic integrators process the sensor signals into operating data for continuous in-line weighing and solids flow measurement. The BW100 offers economical, basic operation with belt scales. The BW500, SF500 and FTC can take over basic control functions traditionally handled by other higher level devices, like PID and batch control. They display instantaneous readings of rate and total material flow for flowmeters or rate, total load and speed for belt scales and weighfeeders.

SIWAREX weighing modules for SIMATIC automation systems

Further advantages result from complete integration of the SIWAREX weighing modules into the SIMATIC system platform. Using standard SIMATIC components, it is simple to adapt the weighing system to your individual requirements. In addition, standardized interfaces, totally integrated functions, and uniform tools enable cost-effective configuration.

SIWAREX summary

Performance features

- Integrated in SIMATIC as function module (FM).
- High accuracy.
- Legal for trade.
- Graded scope of functions.
- Suitable for hazardous areas.

SIMATIC system environment

- Integration in S7-300/400 with several software packages.
- Profibus using ET200M or ET200S.
- Integration in PCS 7.
- Integration in S7-200. As an extension module (EM), SIWAREX can also be used for various applications in micro automation.

Scale types

The following scales can be designed using SIWAREX modules:

- gravimetric level measurement
- platform scales
- batching and dosing
- checkweighers
- sacking and filling
- beltscales
- solid flowmeters
- loss-in-weight
- truck scales
- many many more

Appropriate to requirements, the SIWAREX modules have been assigned approvals and certificates for the EU and also for various countries outside the EU.

The modules can also be used for force measurements.

Application software

Predefined SIMATIC projects “GETTING STARTED” are available for all new SIWAREX modules. These greatly simplify the specific application in SIMATIC. Further software packages provide complete applications – SIWAREX MULTIFILL for filling plants and SIWAREX MULTISCALE for batching plants.

SIWAREX FTC

SIWAREX MS

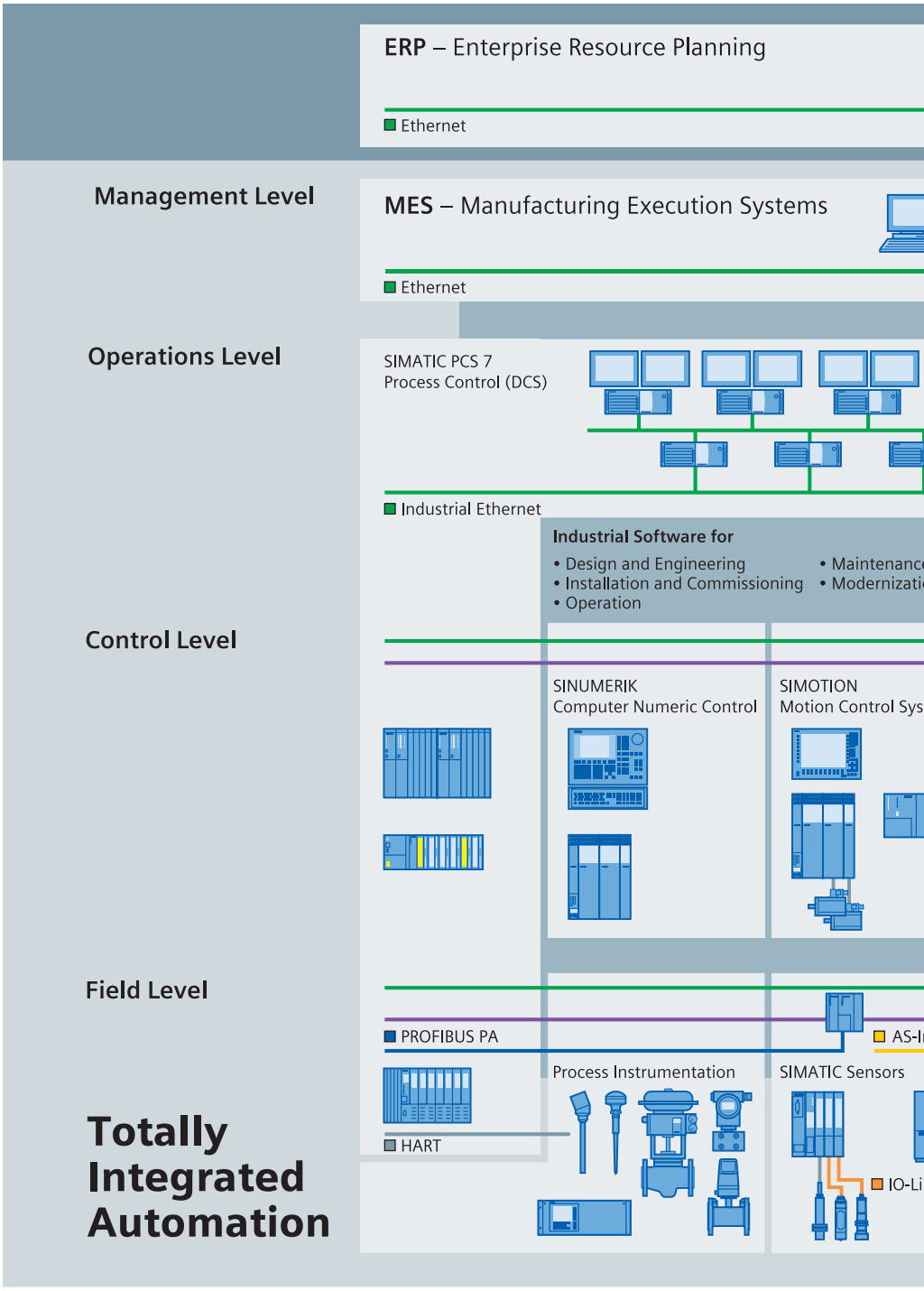
SIWAREX Weighing Electronics

BW500 Integrator

SF500 Integrator

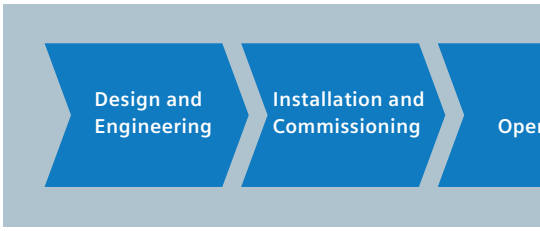
BW100 Integrator

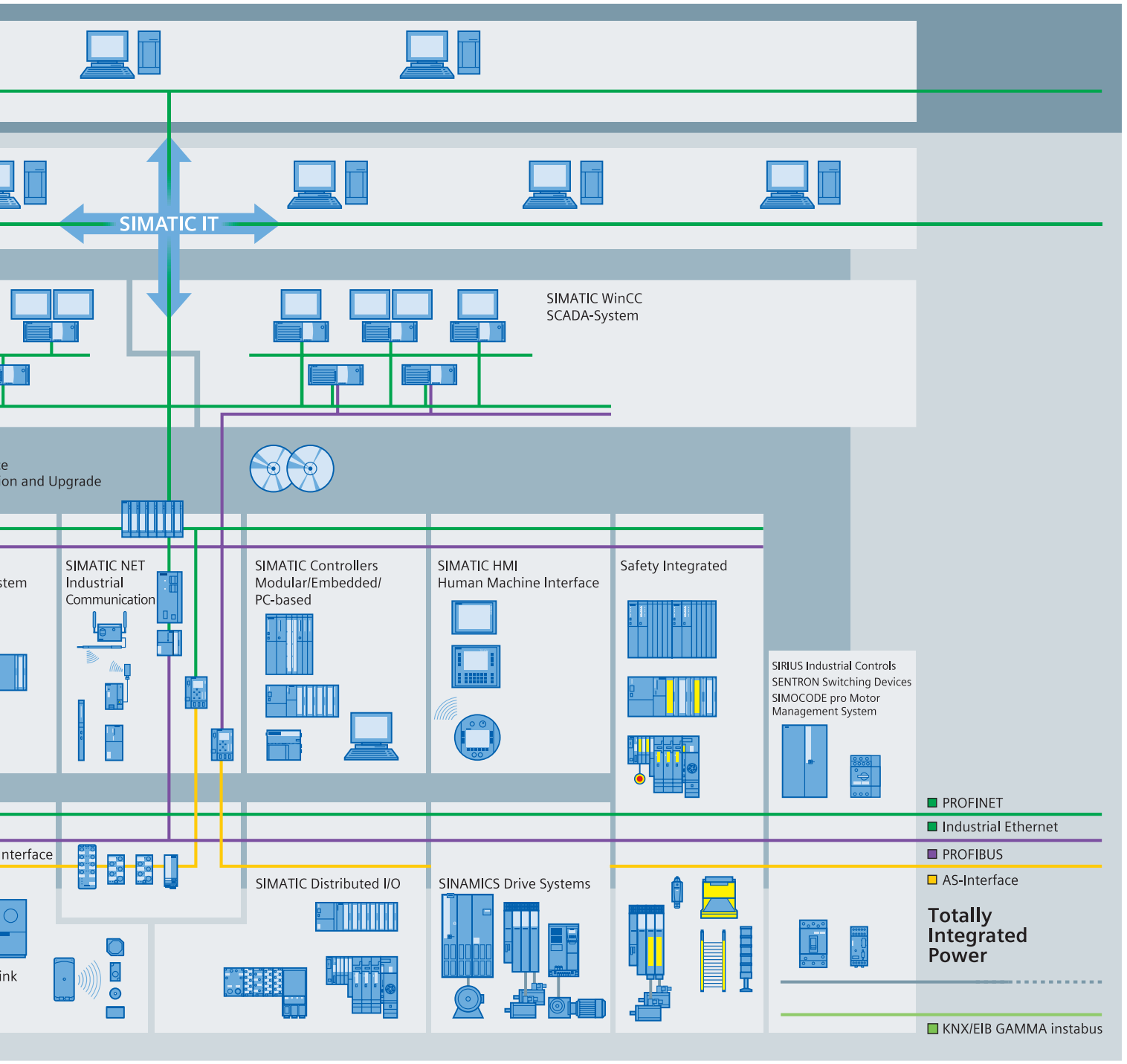
Communication and Software



Totally integrated automation – TIA

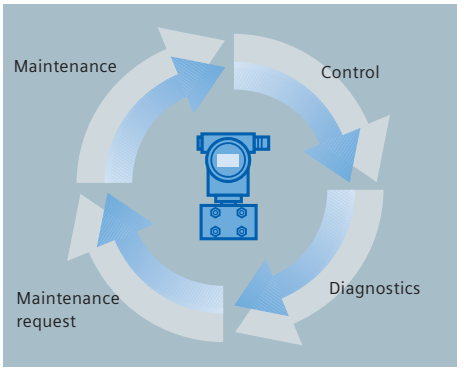
Totally Integrated Automation is characterized by its unique degree of integration which ensures a high level of transparency at all plant levels – from the field level to the production control level and the corporate management level. This concept provides considerable benefits throughout the entire plant life cycle, from the initial planning and engineering stages, commissioning, operations and maintenance right through to modernization. The process instruments designed by Siemens have been perfectly integrated into the TIA concept. The SIMATIC PDM (Process Device Manager) is used as a central parameterization tool



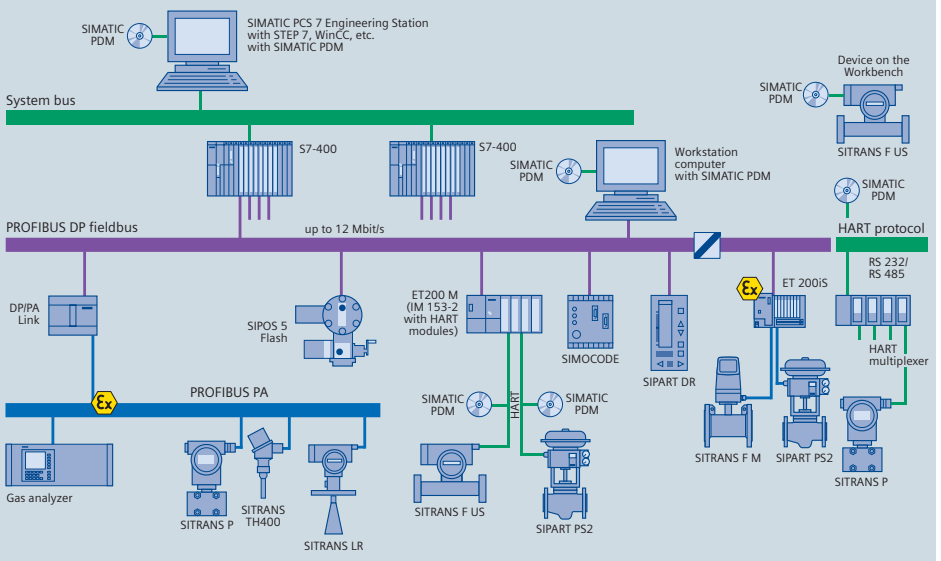


ration | Maintenance | Modernization and Upgrade

to allow the user continuous access to all the field devices of his plant. Thanks to modern fieldbus communication like HART, PROFIBUS or FOUNDATION Fieldbus the field devices can be integrated into the overall plant. By integrating the devices into the PCS7 Asset Management system the user receives diagnostics information from the field devices whenever he needs it, allowing him to optimize the servicing and maintenance of his plant and avoid downtime.



Communication



Applications for SIMATIC PDM

SIMATIC PDM

SIMATIC PDM (Process Device Manager) is a universal, non-proprietary tool for the configuration, parameterization, commissioning, diagnostics and maintenance of intelligent field devices (sensors and actuators) and field components (remote I/Os, multiplexers, control room devices, compact regulators).

Over 1,200 process devices from more than 100 manufacturers are supported by SIMATIC PDM. The design and function of the devices can be described using the Electronic Device Description Language (EDDL), based on the leading EDD international standard (Electronic Device Description; IEC 61804).

SIMATIC PDM uses this to automatically create an easy-to-use interface providing the required information on the process devices. The extension and standardization of the EDDL into Enhancement Levels 1 and 2 means a wide range of important functions are available in the EDD, including the OPC unified architecture.

Communication with process devices is by HART, PROFIBUS or alternative protocols. SIMATIC PDM can be used as a non-proprietary parameterization tool as well as in the integrated version in the SIMATIC Step7/ PCS 7 environment.

SIMATIC PDM meets both requirements in the field as well as those for a central engineering system and centralized service and maintenance.

HART – field communication protocol

The HART® communication standard is widely used for field devices. HART devices are defined by the HCF (HART Communication Foundation). The HART standard extends analog 4 to 20 mA signals to modulated, industry-quality, digital HART signals. The advantage is the combination of tried-and-tested analog measurement-value transfer and simultaneous digital communication with bi-directional, acyclic transfer. This allows transfer of diagnostics, maintenance and process information from field devices to higher-level systems. Standardized parameter sets can be used for the non-proprietary operation of all HART devices.

HART device descriptions (EDD) are used to integrate HART devices into the SIMATIC PDM.

This ensures simple operation and commissioning of field devices, even in inaccessible locations.

PROFIBUS

Decentralized automation solutions based on open field buses are currently standard in many areas of the production and process industry. The benefits of digital communication can only be fully exploited in combination with field buses, including improved resolution of measurement values, diagnostics options and remote parameterization.

PROFIBUS is currently the most successful open field bus, providing a flexible platform for a variety of applications. Based on the IEC 61158 standard, it is a reliable investment and suitable for fast communication in production and process automation. It is the first field bus and meets the requirements of both sectors with the same communication performance.

PROFIBUS PA is tailored to the requirements of the process industry, handling both the power supply for the devices and communication between the devices and higher-level systems.

PROFIBUS PA is intrinsically safe and can be used in hazardous areas.

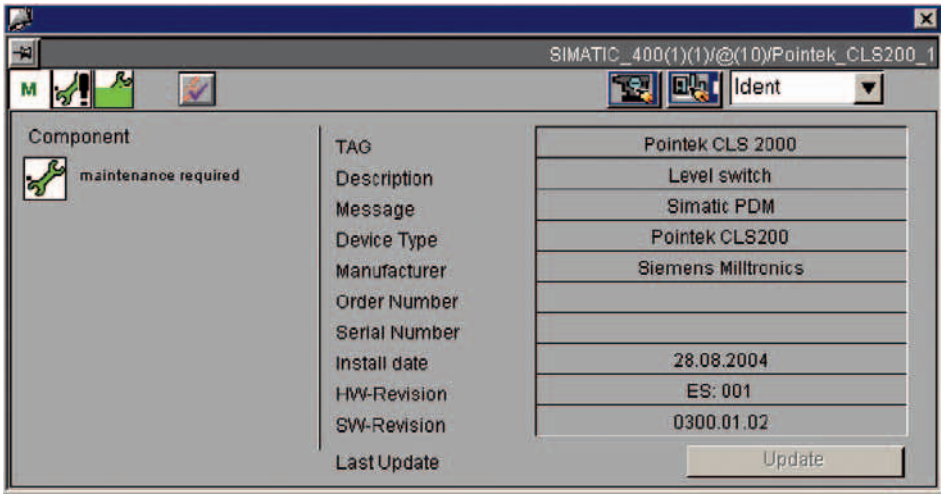
FOUNDATION Fieldbus

Field devices for measuring pressure and temperature and actuators are also available for the intrinsically safe FF bus. Communication via FF is also based on the EDD standard and thus also offers the benefits of digital communication.

Asset Management

Asset Management comprises all activities and measures designed to maintain or increase the value of a plant. This primarily includes value-enhancing service and maintenance (plant-specific asset management) in addition to business management, process management and process optimization. SIMATIC PDM is particularly suited to plant-specific asset management with its comprehensive functionality for configuration, parameterization, commissioning, diagnostics and maintenance of intelligent field devices and components. To deliver detailed and reliable results, asset management systems require a large amount of basic information.

SIMATIC PDM can provide the device data required for plant-specific asset management and transfer it to higher-level asset management systems in XML format via a uniform interface. It is based on the device descriptions (EDD) that are independent of the operating system. Extraction of information and interpretation of results are independent of the type of device, so it is irrelevant whether the device is an actuator or a sensor, a PROFIBUS or a HART device. However, SIMATIC PDM is much more than just a data logger for higher-level asset management systems. It offers a wide range of asset management functions as well.



Asset management view in PCS 7

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