Products and Solutions Portfolio

Measuring Instruments, Actuation and Control, Systems and Solutions,
Accessories, Technologies, Didactic Products.

Product Portfolio

SMAR develops, manufactures and sells instruments, Controllers, hardware and software for the measurement, control, operation and management of maintenance assets. Provides Project, Factory Acceptance Test, Site Acceptance Test, Site Integration Test, Commissioning, Start-up and Technical Assistance services.

Contact us

PROCESS CONTROL FROM START TO END WITH EXCELLENCE

SMAR is a Brazilian technology brand, controlled by the company Nova Smar S/A, which is headquartered in the Sertãozinho city, one of the important industrial centers in the São Paulo State and with easy logistical access to all regions of the country for product distribution and face-to-face service. The SMAR brand was created in 1974, currently positioned as a Technology Company, specialized in providing solutions for control and processes industrial automation, attentive and closely following the rapid digital technologies advance, which has caused the innovative emergence, differentiated and even disruptive resources, many of them interesting, applicable and that can be associated with automation solutions.

SMAR develops, manufactures and sells instruments, controllers, hardware and software for measurement, control, operation and asset management. Provides Project, Factory Acceptance Test, Site Acceptance Test, Site Integration Test, Commissioning, Start-up and Technical Assistance services.

Leading product creation, using advanced and disruptive concepts of digital technology for process control, Foundation Fieldbus, whose efforts earned to the brand the nickname “First in Fieldbus”. And to this portfolio of solutions, over the years, other emerging technologies have been added.

SMAR is a member of the O-PAS™ (Open Process Automation Standard), a “standard of standards” to define a vendor-neutral reference architecture, aimed at building scalable, reliable, interoperable, and secure process automation systems. This technology has been achieving worldwide accession of the most important users worldwide. In this scenario, the SMAR solution is once again the protagonist of the market, as it was conceived incorporating the concepts of architecture and characteristics that are part of this standard, differently from the solutions that are available in other providers in the world market.

GOOD REASONS TO PURCHASE A SMAR EQUIPMENT

- Continuous search for solutions for control and industrial processes automation and updating of its products, professionals development who collaborate with the growth and the company quality, training of various representatives and customers through virtual seminars and SMAR technology acceleration program (PATS);

- Sales representatives Team prepared to help in the products safely specification, for each application type, combining technical solutions and material for each process type;

- Products produced in Brazil, production line with performance and quality tests following the most national and international certificates demanding standards;

- It has an ISO 9001 certificate, which is widely accepted by industries on the international market.

ORGANIZATIONAL IDENTITY

MISSION

Supply the global automation market with complete, advanced, efficient, robust and cost-effective products and solutions.

VISION

To achieve worldwide notoriety for the company's creative and innovative spirit, as well as a management strategy focused on the satisfaction of customers, investors and employees, guieded by social, environmental and legal responsibility.

VALUES

Creativity and innovation; customer satisfaction; teamwork; clear and effective communication; flexibility; transparency.

QUALITY POLICY

Meet all expectations of customers and other stackhoelders, offering quality products and services, while constantly seeking the continuous improvement of processes, products, and services, under the following guidelines:

- Effective leadership involvement in outlining strategies and goals;
- Constantly seeking to optimize resource use;
- Continuously improving processes to enhence speed and - efficiency;
- Improve communication between different areas and processes;
- Developing the knowledge and skills of employees.

SMAR has a team of representatives prepared to serve customers with agility and competence in interpreting the requested technical descriptions and applications. Our team guarantees flexibility in the best price, term, and other information.

smar Technology Company

QUALITY MANAGEMENT

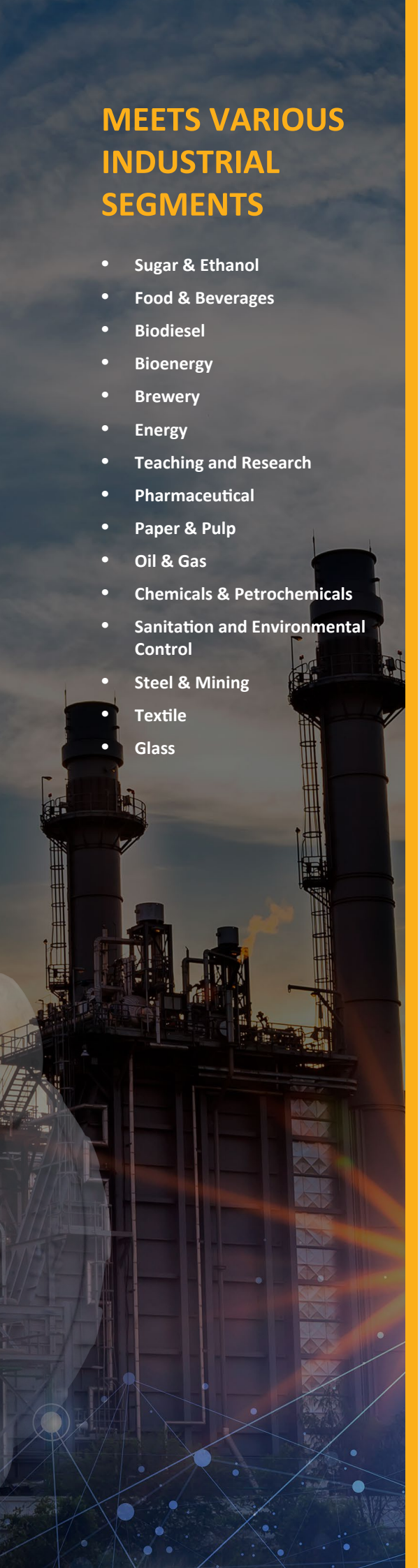
QUALITY

The Smar Quality Management System obtained its first certification in 1992, being one of the first ISO9001 certified companies in the electronics area in Brazil.

Since then, it has maintained its Quality Management System continuously evolving, it has as a long-time partner in this certification the "Bureau Veritas Certification", an internationally recognized company that allows us to enter the list of suppliers of companies in Brazil and in the world regarding the solutions for industrial automation.
The established Quality Management System gives Smar customers confidence that the company is able to consistently provide products and services that meet specified requirements and provides a framework for continuous improvement of its processes and products, increasing customer satisfaction and from other interested parties.

The structure of Smar's Quality Management System is based on some main pillars, that is, customer relationship, corrective action system, audit, process and product measurement.

ISO 9001
BUREAU VERITAS
Certification



MEETS VARIOUS INDUSTRIAL SEGMENTS

- Sugar & Ethanol
- Food & Beverages
- Biodiesel
- Bioenergy
- Brewery
- Energy
- Teaching and Research
- Pharmaceutical
- Paper & Pulp
- Oil & Gas
- Chemicals & Petrochemicals
- Sanitation and Environmental Control
- Steel & Mining
- Textile
- Glass

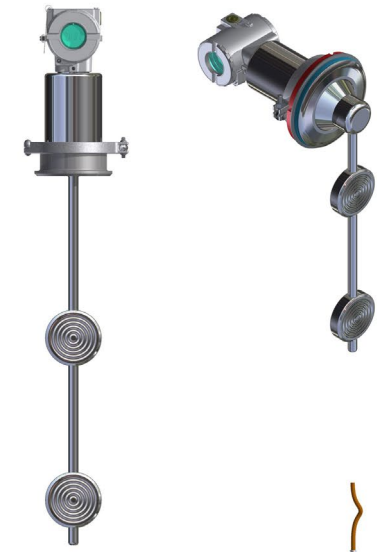
Product Index

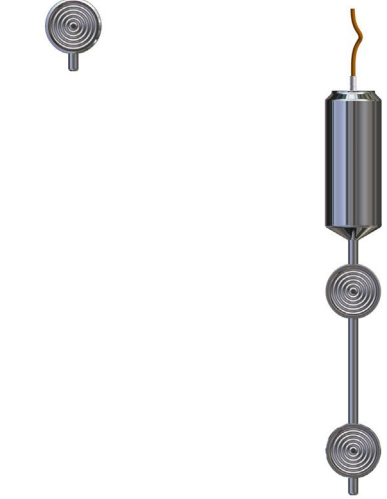
smar
Technology Company

Measuring Instruments

DT300 Series

Smart Density Transmitters





The DT300 smart density transmitters line was designed for density and concentration continuous measurement of liquid in industrial processes. The complete line is available in the 4-20 mA + HART®, FOUNDATION™ fieldbus, and PROFIBUS-PA technology options.

These transmitters use an exclusive and patented technology to calculate the density, where a probe immersed in the process, with two pressure sensors and one temperature sensor, is connected to a capacitive sensor which calculates the ΔP between the pressure sensors. With the ΔP and temperature, a dedicated software calculates the density and concentration of the process fluid. This density/concentration may be expressed in g/cm³, kg/m³, lb/ft³, relative density, °Brix, °Bé, °INPM, °GL, °API, %Solids and %Concentration.

The DT300 may be installed in a pipe or directly in the process tank. The DT300 Series may be applied in Sugar & Ethanol Plants, Food Industry, Beverage Industry, Chemical & Petrochemical Industries, Pulp & Paper Industries, Oil & Gas Industries and Mining.

- Accuracy ± 0.0004 g/cm³;
- Range 0 a 10 g/cm³;
- Standard industrial and sanitary (3A) process connection;
- Multifunction rotary display LCD;
- Two-wire loop powered;
- Several different wetted materials;
- Single integrated unit, without moving parts;
- Factory calibration and self-calibration;
- In-field re-calibration:
  - No standard reference required;
  - No lab calibration required;
  - No process shutdown;
- Continuous/self diagnostics;
- Weather proof, explosion proof and intrinsically safe;
- Totally digital; including sensor, electronics and communication;
- Configurable via local adjustment (FOUNDATION™ fieldbus and PROFIBUS-PA);
- Easy firmware upgrade (via Flash Memory Interface) for FOUNDATION™ fieldbus and PROFIBUS-PA.

TK Tanks

Below we present some of the tanks that can be supplied by Smar together with the Concentration and Density Transmitters.

We can analyze, propose changes and improvements so that the tanks adapt to the process, with regard to material, dimensions of pipes and inlet and outlet flanges.

Standby Tank

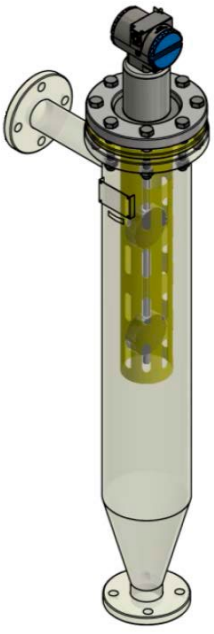
Mounted on the side of a process tank, this adapter is very useful in tanks with agitation and, especially, with suspended solids. It reduces the abrasiveness of the medium and the interference of turbulence in the measurement.

Ascending Flow With Normalizer Tube

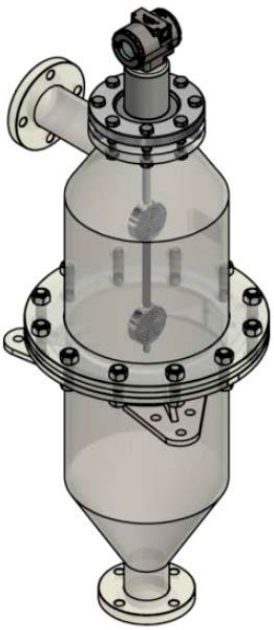
Sampler tank for upflow.
This tank, together with the normalizer tube, allows measuring the process density with a more laminar flow medium, minimizing the turbulence effects and other dynamic conditions.

Smar can supply tanks with different diameters as standard, depending on the fluid flow:

- 4” for flow up to 7 m3/h
- 6” for flow up to 17 m3/h
- 8” for flow up to 31 m3/h
- 12” for flow up to 71 m3/h (Bipartite)



4” - 6” - 8”



12” - Two-party

Ascending Flow of Overflow with Normalizer Tube

Sampling tank with ascending flow, for installations where their output can continue in the process at atmospheric pressure. Due to its construction and the overflow principle, the flow through the tank is laminar, greatly minimizing the turbulence effect. Its construction facilitates the internal visualization of the flow, mainly in viscous products, many suspended solids, etc.

Sanitary Ascending Flow 6"

Sampling tank for ascending flow to be used in sanitary installations. Its design allows for the systems efficient cleaning by CIP systems.

TP300 Series

Smart Position Transmitter

The TP300 Series produces an output signal proportional to the displacement length of mechanical equipment. The TP300 Series is available in 4-20 mA, HART®, FOUNDATION™ fieldbus, and PROFIBUS-PA technology options. Additionally, the TP290 is available in 4-20 mA technology option. The TP300 can be used to measure linear or rotary displacements. The position sensor used in the TP300 family is based on the Hall Effect, without mechanical contact. Additionally, the TP300 has the option for remote sensor position with extension cables up to 20 m. Suitable for applications in high temperature, excessive vibration or difficult local access.

The TP300 Position Transmitter can be configured locally with the Smar magnetic tool, without the need to open the electronic housing. Suitable for applications in hazardous area. In addition to local configuration, the TP300 Position Transmitter can be configured via HPC401 HART® Configurator manual or by any other manufacturer complying with HART® Foundation standards.

It is also possible to configure and operate the Position Transmitter with applications based on desktops for HART®, FOUNDATION™ fieldbus and PROFIBUS-PA technology.

- Output signals: two-wire, 4-20 mA, HART®, FOUNDATION™ fieldbus or PROFIBUS-PA technology options;
- Linear stroke: 3 to 100 mm;
- Rotary stroke: 30° to 120°;
- Indication: Rotary display LCD, with 4½-numerical digits and 5-alphanumeric characters;
- Material: Aluminum or 316 SST;
- Temperature Limits: Ambient: -40 to 85 °C (-40 to 185 °F);
  Process: -40 to 100 °C (-40 to 212 °F);
- Humidity Limits: 0 to 100 % RH;
- Certification for Hazardous Area: explosion-proof, and intrinsically safe.

LD1.0

Economic Capacitive Pressure Transmitter

The Smar LD1.0 is an Economic Capacitive Pressure Transmitter and was designed for liquid, gas and steam gauge pressure measurement in several industrial applications such as, industrial process measurement, pneumatic and hydraulic systems, pumps and compressors, machine and machining tools. This low price transmitter is the only one in its market category to use the capacitive sensor technology for pressure reading in a completely digital way, which provides excellent precision, repeatability and linearity for the measurement. The LD1.0 design features provide resistance to vibration, shock, and great temperature variations, immunity to electromagnetic interference and other extreme environmental conditions that are typical in industrial applications.

The LD1.0 is the transmitter in its class that offers the best cost/benefit.

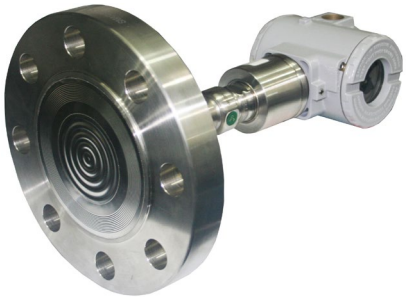
- ± 0.2% accuracy;
- 4-20 mA output signal according to NAMUR NE43;
- HART® and PROFIBUS-PA Communication Protocols;
- Several Process Connections Options;
- Cabe Gland Electrical Connection - Without Polarity;
- Wide range of pressures, up to 150 bar;
- 50:1 Rangeability;
- Operation Temperature: - 40 to 85 °C;
- Response time 200 ms;
- Zero and Span Local Adjustment;
- Configuration Protection with Password;
- Housing Material in 17-4PH / AISI316L;
- Diaphragm Material in Hastelloy C276;
- Fill fluid in Silicone;
- Support for DD, EDDL and FDT/DTM;
- IP65 rated enclosure.

LD290 Series

Gauge Pressure Transmitter and Level

The LD290M models are an economical alternative for gauge pressure and level transmitters. It is based on a field-proven capacitive sensor that provides reliable, safe operation and high performance. As there is no A/D conversion on pressure reading, errors and drifts during conversions are eliminated. A temperature sensor provides temperature compensations, which combined with the sensor precision, results in high accuracy and stability for the LD290 Series. This lightweight design can eliminate the need for mounting brackets. In many applications they can be attached directly to the process without using impulse lines. The coupling of remote seals and sanitary connections are also available for all of the LD290 Series.

The LD290L models were designed to be a low cost alternative for level measurement in non-pressurized tanks. The process connection is a slip-on flange in Plated Carbon Steel, 304 SST or 316 SST. The LD290L (4-20 mA), LD291L (4-20 mA + HART®), LD292L (FOUNDATION™ fieldbus) and LD293L (PROFIBUS-PA) versions are available.



The LD290I models are gauge pressure transmitter with an extended probe for level measurement in non-pressurized tanks. A probe, in several lengths, with a sensor in its ends, is immersed in the process fluid, providing the level of the liquid in the tank. Several process connections options are available.

The LD290 Series have the following characteristics:

- ± 0.75% accuracy;
- Wide range of pressures, up to 25 MPa (3600psi);
- Totally digital, including sensor, electronics and communication;
- Several options for process connections;
- Response time 100ms;
- Simple (zero and span) and complete local adjustment;
- MTBF (Mean Time Between Failures) of 239 years;
- 40:1 rangeability;
- Configuration and remote diagnostics by HI331 and FDT/DTM;
- Multifunction rotary display;
- Digital communication via HART®, FOUNDATION™ Fieldbus, and PROFIBUS PA protocols;
- Weather proof, explosion proof and intrinsically safe;
- Built-in transient suppression.

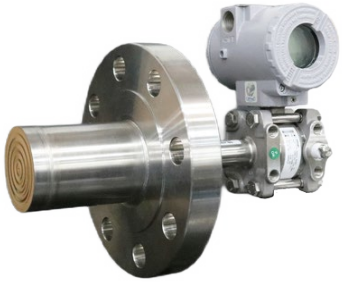
LD300 Series

Pressure, Level, and Flow Transmitters

The LD300 Series is a complete line of smart transmitters for differential, absolute, gauge, high static differential pressure and flow measurement as well as models for level, remote seal and sanitary applications. The LD300 Series is a robust and highly reliable solution for your process. For flow measurement, the transmitter offers user selectable square root function making it suitable for commonly used flow sensors.

The large acceptance of the LD300 line is due to the use of a capacitive cell as pressure sensor, which keeps the digital signal from the pressure reading up to the transmitter output, increasing the device accuracy and stability. For applications requiring the highest accuracy, the LD300 series offer the model L1, with 0.04% accuracy. Three options of communications protocols for configuration, monitoring and diagnostic are available: HART®, FOUNDATION™ fieldbus and PROFIBUS PA.

- ± 0.075% accuracy for standard models;
- ± 0.040% accuracy for L1 models (high performance);
- ± 0.2% of URL stability - Guarantee for 12 years*;
- Wide range of pressures, up to 40 MPa (5800 psi);
- 120:1 rangeability;
- 100 ms total response time;
- PID control capability*;
- Advanced diagnostics*;
- Bi-directional flow measurement*;
- Support for DD, EDDL and FDT/DTM*;
- Built-in transient suppression*;
- Low Total Probable Error*;
- Multifunction rotary display*;
- Simple (zero and span) and complete local adjustment*;
- Weather proof, explosion proof and intrinsically safe.



LD400 HART®

Pressure, Level, and Flow Transmitters

The LD400 Series is a complete line of smart transmitters for differential, absolute, gauge, high static differential pressure and flow measurement as well as models for level, remote seal and sanitary applications.

LD400 offers the best solution for all field applications demanding the highest performance. It is a robust and highly reliable solution for pressure, level and flow measurement. It has high flexibility in applications due to use of a capacitive cell as pressure sensor, which keeps the digital signal from the pressure reading up to the transmitter output, increasing the device accuracy and stability.

All the processing is made by the HT3012, a powerful mathematical co-processor and a 16-bit CPU that ensures a fast response time and high performance for the transmitter. The LD400 is SIL 2 and SIL 3 certified by TUV in compliance with the IEC 61508-2010 for using in Safety Instrumented Systems (SIS).

LD400 is the best choice to increase productivity and ensure process reliability and safety.

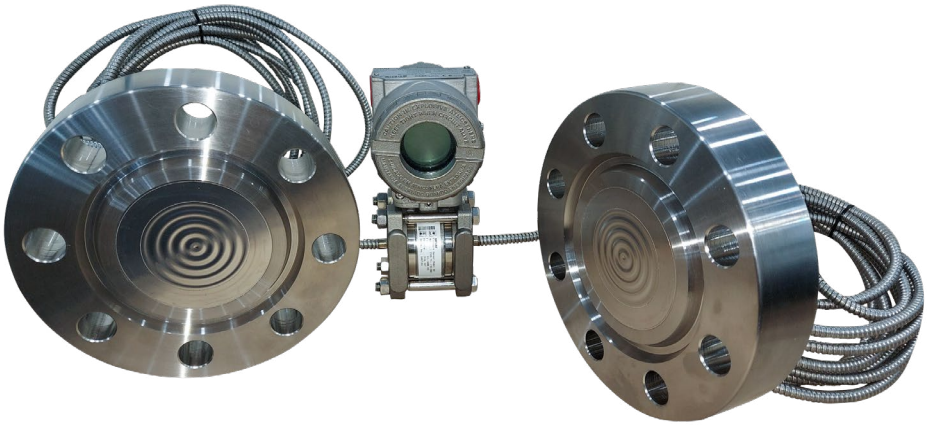
- ± 0.045% accuracy;
- 200:1 rangeability;
- 35 ms total response time;
- Non-polarity power supply input;
- HART® Protocol;
- Suitable for installations requiring SIL2 and SIL3.

*Note: *These characteristics can also be found in the LD400 HART® SIS*

SR301 Series
Remote Seals

The SR301 series is a complete Remote Seal line, which is coupled on the pressure transmitters to meet different applications such as very high or very low temperatures, areas of difficult access or with too much vibration.

- SR301T: Flanged remote seal for general applications. The flush connection is optional;
- SR301E: Flanged remote seal with extension for general applications and it is very used when the tank wall is coated;
- SR301P: Pancake type remote seal especially used in applications with limited installation area. It may be supplied optionally with flush connection;
- SR301Q: Pancake remote seal with extension;
- SR301R: Threaded remote seal for general applications with a wide variety of threaded connections. Optionally it may be supplied with flush connection;
- SR301S: Sanitary remote seal especially designed for use in food industries and other applications where sanitary connections are required.



RD500
Guided Wave Radar Level Transmitter

The RD500 uses the principle of Time Domain Reflectometry (TDR) for direct measurement of levels in industrial processes. Through an radio frequency (RF) generator, low frequency waves are emitted through a probe in contact with the process whose level is to be measured.

The waves, entering a medium with a different dielectric constant, return through the probe thanks to the change in the impedance of this medium.

With dedicated software, the RD500 continuously calculates the wave reflection time and the desired level.

- Independent of density or temperature variations;
- Measurements not affected by viscosity, gravity, gases inside the reservoirs and turbulence;
- Average accuracy of ±5 mm;
- Remote configuration or by local adjustment;
- Calculation of volume by linearization in any tank.

Coaxial (1-6m) | Haste Simples (1-8m) | Haste Dupla (1-8m) | Conexão Tri-Clamp com Hastes Polidas (1-4m) | Cabo Simples (1-14m)

TT300 Series

Smart Temperature Transmitters

The TT300 temperature transmitter line is a fully digital, accurate, and compact solution for temperature measurements. The TT300 transmitters accept different types of sensors with large measurement range, with 2, 3 and 4-wire connections. TT300 Series have several features that reduce the installation, operation, and maintenance costs. They are suitable for direct field installation and are weather and explosion proof, and intrinsically safe for use in hazardous areas.

- ± 0.02% accuracy;
- Built-in thermocouples and RTD's linearization;
- True non-interactive zero and span;
- Remote configuration via Hand-Held Terminal or PC;
- Small and lightweight;
- Explosion proof and weather proof housing;
- EMC (Electromagnetic Compatibility) according to IEC standards;
- Write protection function;
- Intrinsically safe;
- Three technology options: HART®, FOUNDATION™ fieldbus, and PROFIBUS PA;
- Support for DD/EDDL and FDT/DTM.

TT383

Eight Channels Temperature Transmitter

TT383 has independent channels to measure up to 8 (eight) different points. The temperature information is provided by the Profibus PA communication protocol and the measurement can be done via Thermocouples or RTD sensors. Some TT383 features:

- Eight temperature channels for several types of sensors;
- ± 0,03% accuracy;
- 2 or 3 wires sensor connections;
- Input signal isolation;
- DD/EDDL and FDT/DTM technologies based;
- Differential measurement;
- Sensor backup;
- Multiple sensor options

Wireless Technology

LD400 *Wireless*HART™

Pressure, Level, and Flow Transmitters

The LD400 WirelessHART™ Series is a complete line of smart transmitters for differential, absolute, gauge, high static differential pressure and flow measurement as well as models for level, remote seal and sanitary applications. LD400 WirelessHART™ offers the best solution for all field applications demanding data wireless transmission and highest performance. It is a robust and highly reliable solution for pressure, level, and flow measurement. It works in mesh network that is self-organizing, has low power consumption and has long life battery power.

- ± 0.045% accuracy;
- ± 0.2% of URL Stability - Guarantee for 12 years;
- 200:1 rangeability;
- Advanced diagnostics;
- Support for DD, EDDL and FDT/DTM;
- Local adjustment: simple (zero and span calibration) and complete;
- Low Total Probable Error;
- Repeater/router function in mesh network;
- “Burst Mode” for sending periodics statements;
- Battery operation for long duration;
- WirelessHART™ Protocol.

LD400G *Wireless*HART™

The LD400 Inline WirelessHART™ transmitter allow liquid, steam, and gas gauge pressure measurement, or liquid level measurement in open or closed non-pressurized tanks. Several process connection options are available for installations directly on the pipe or tank, without impulse lines and brackets in most installations.

- ± 0.075% accuracy;
- Wetted parts: AISI 316L or Hastelloy C276.

LD400I *Wireless*HART™

The LD400 Insertion WirelessHART™ level transmitter with extended probe is a simple option for measuring liquids in open tanks, closed non-pressurized tanks, channels, wells etc. Several types of brackets enable a quick and fast installation on the top of the tank, for example, using existing manholes, to avoid tank drilling.

- ± 0.2% accuracy;
- Several probe lengths up to 3200 mm;
- Extended probe material: AISI304L or AISI316L;
- Diaphragm material: AISI316L or Hastelloy C276.

WirelessHART

TT400 *Wireless*HART™

WirelessHART™ Temperature Transmitter

TT400 WirelessHART™ is used in all field applications demanding data wireless transmission. Smar TT400 WirelessHART™ is a transmitter mainly intended for temperature measuring using RTDs or thermocouples. This device can operate even with two sensors and in the following conditions:

- Simple measurement, by using only one sensor;
- Differential measurement, with two sensors (same type);
- Backup measurement, with two sensors (same type);
- Maximum, minimum or average measurement, two sensors (same type).
- 0.02% accuracy;
- Single unit and several options for sensors and connections;
- Advanced diagnostics;
- Support for DD/EDDL and FDT/DTM;
- Sensor backup.

TT481 *Wireless*HART™

4 or 8 Channels Temperature Transmitter

Imagine all the advanced features of Smar temperature transmitters, but now with wireless technology. The TT481WH (WirelessHART®) has the same features as the TT400 Series, but following the standard of HART Communication Foundation for wireless transmitters. It is an excellent and cost-effective solution for 4-20mA equipment integration with WirelessHART®. Some of its features:

- Input current 4-20mA
- Accuracy 0.2% of span in A / D converter
- HART Protocol version 7 with the commands of the standard WirelessHART®
- Several types of sensors supported: thermocouples, RTDs, mV signals, and Ohms
- Display indication about wireless network status
- Battery life which can reach up to 7 years
- Bracket for easy mounting and positioning of the transmitter
- Configurable locally via handheld and PC, or remotely via wireless.

TP400 *Wireless*HART™

WirelessHART™ Position Transmitter

The TP400 is a WirelessHART™ transmitter for position measurement and it is part of the family of Smar devices. It can measure displacement or movement of rotary or linear type based on Hall effect non-contact sensor.

The digital technology and wireless communication provide an easy interface between the field and control room and several interesting features that considerably reduce the installation, operation and maintenance cost.

The TP400 WirelessHART™ may be installed to monitor valves and actuators position or in any equipment with linear or rotary motion such as skylights, dampers, rollers spacing, crushers, etc. There is an option for remote sensor with cable length up to 20 m.

RP400
*Wireless*HART™ Repeater

The RP400 is a *Wireless*HART™ network dedicated device and its main function is to extend the network range working as a router manager, simplifying the design and implementation of a wireless network.

The device is passive and has no actuation in the industrial process.

The *Wireless*HART™ communication network is structured as a mesh, allowing. The network nodes to communicate with each other establishing redundant paths to the gateway, increasing the network availability.

This type of networks also allows scalability simply by adding additional nodes or the RP400 repeaters into the network.

Another characteristic is that the bigger is the network, more reliable it becomes because more alternative paths will be created.

- *Wireless*HART™ digital communication;
- Increase of communication routes, facilitating the *Wireless*HART™ network scalability;
- Increased reliability through alternative paths in the Mesh network;
- Solution with excellent cost/benefit ratio;
- Lithium primary batteries (Li-SOCl2) lasting up to 6 years;
- Maximum use with the Smar gateway DF100.

Actuation and Control

ACP Series
Pneumatic Cylindric Actuator

ACP Rotativo

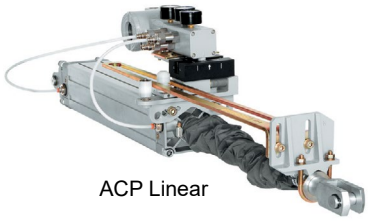
ACP Series actuators are devices that receive an electrical signal and position their stem in accordance with the received signal. Available in the 4-20 mA, HART®, FOUNDATION™ fieldbus, and PROFIBUS PA technology options for FY301, FY302, FY303 and FY400.

Available in the linear version, for 100 to 1000 mm displacements, or the rotary version.

The ACP cylinders are in compliance with the ISO 15552 standard, are self-lubricating, guide linkage, with magnetic piston for the purpose of using magnetic limit switches and double action with dampening.

The configurations can be done locally or remotely, facilitated by different FY options, without needing to open the electronic housing.

Additionally, the ACP has the option for "remote position sensor", suitable for applications in high temperature, excessive vibration or even difficult local access.



ACP Linear

- 20 to 100 psi pressure;
- Operation temperature: -20 to 80 °C;
- Stroke available: 100 to 1000 mm;
- Diameters available: 50, 63, 80, 100, 125 e 160 mm (consult Smar for other diameters options).
- Auto Setup;
- Bracket Material in Carbon Steel;
- Cylindrical material in cast aluminum with low copper percentage;

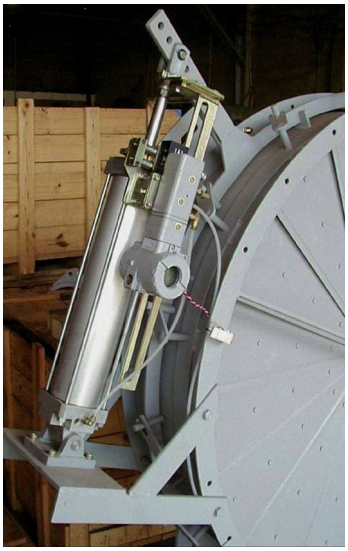
AD/AR/AL
Electric Actuators

The Smar rotary actuators are designed to replace, with high reliability, the manual operation of valves in places of difficult access or high danger for the operator, mainly operations that require work regimes with high frequency of maneuvers. Additionally, they are recommended for high torque and quick positioning operations in valves whose total number of turns is large. It also has automatic process control capability in valves that operate in two extreme positions or for which modulation is required.

- Simplicity of operation;
- Robustness;
- Long durability;
- Protection against environmental attack and overload;
- Ease of maintenance;
- Precise positioning;
- IP65 rated enclosure.

BFY-CL

Coupling Device



BFY-CL is a coupling device for the FY family of Smar positioners, for final elements of control and with strokes longer that 100 mm. The operation principle of BFY-CL is based on the oblique split rule, reducing an original long stroke to a short one, orthogonal to the original travel. Designed for ISO 6431 series cylinders - SAE1020 carbon and stainless steel materials.

The BFY-CL is used with the FY300 Series and FY400 Smar positioners - presented in three technology options: HART®, FOUNDATION™ fieldbus, and PROFIBUS PA.

- For use in ISO 15552 series cylinders;
- 100 mm to 1000 mm cylinder and ruler strokes;
- 50 mm to 160 mm cylinders diameters;
- Carbon and stainless steel materials.

Para consultar los modelos y dibujos de tipos de soportes BFY para posicionadores FY, ingrese a la página del producto desde el enlace https://www.smar.com/brasil/produto/fy300series-posicionador-inteligente-de-valvulas
Dirígete al Área de Descargas y accede a la opción Soporte FY para elegir el tipo de soporte que más te convenga.

FY300 Series

Smart Control Valve Positioner

The FY300 Series converts the input signals to pressure values, for the valve actuator to move its stem to the more appropriate and accurate openings, in order to carry out adequately the process control strategies. The FY300 Series is available in 4-20 mA or HART®, FOUNDATION™ Fieldbus, and PROFIBUS PA technologies. The valve position is measured by a magnetic sensor, without physical contact. The FY300 series presents a local magnetic sensor assembly, or remote mounting up to 20 m cable length for applications involving severe vibration, high temperatures, or difficult access.

Appropriate for linear or rotary valve displacement, and for single action or double action valves. Automatic setup takes less than 3 minutes. Local adjustment without needing to open the circuit housing. Universal mounting brackets for rotary or linear valves. Customized mounting brackets are available for different brands and models of control valves.

Connectivity with asset management and FDT/DTM (Field Device Tool/Device Type Manager) applications. The FY300 HART® can also be configured using third-party configuration tools, and also partially configured through local adjustment using the Smar magnetic tool. Provide important data for valve and actuator diagnostics, aimed at preventive and predictive actions. Smar offers PST (Partial Stroke Test) for free for the FY303.

- Travel: Linear Motion: 3 - 100 mm;
  Rotary Motion: 30° - 120°;
- Air pressure supply: 1.4 - 7 bar (20 - 100 psi);
- Flow Characterization: Linear, Equal Percentage, Quick Opening or configurable;
- Aluminum or 316 SST;
- Indicator with 4½ - numerical digit and 5-character alphanumerical;
- Certifications for Hazardous Areas: explosion-proof and intrinsically safe;
- Special option with Position Transmitter built-in on the terminal block of FY301 positioner, through a 4-20 mA output signal.

FY400 Series
Smart Valve Positioner

The FY400 Series is a device that converts an input electrical signal in position for control valve or other final control element with pneumatic actuator that receives signals in 4-20 mA current or in HART® protocol.

Local configuration with magnetic tool, without needing to open the housing, makes it suitable for applications in hazardous areas. The portable configurators based on the HART® protocol, enables full access to the configuration parameters. The configuration also can be done through digital communication, using DevComDroid configuration software (Android DDL Interpreter), used with HART interfaces, such as HI331 bluetooth interface. The FY400 uses a non-contact position sensor. Optionally, the FY400 can be supplied with remote position sensor, available with up to 20 m cable length. The FY400 has advanced diagnostics for control valves, fully configurable. Settings can be made by application programs based on FDT/DTM standard or by AssetView (Smar Asset Management system).

- Auto-tuning of the PID parameters;
- Partial Stroke test;
- Linear and rotary applications;
- Non-polarity power supply input;
- Travel: Linear Motion: 3 to 100 mm;
  Rotary Motion: 30° to 120°;
- Pressure Supply: 1.4 - 7 bar (20 - 100 psi);
- Flow Characterization: Linear, Equal Percentage, Quick Opening or configurable;
- Aluminum or 316 SST;
- Indicator with 4½ - numerical digits and 5-alphanumeric characters;
- Certifications for Hazardous Areas: explosion-proof and intrinsically safe;
- More than 100 types of configurable parameters for diagnostic of control valve.

FY500 Series
Intelligent Valve Positioner

The FY500 is a nozzle-reed system positioner with coil. Accepts a setpoint signal from a controller or other device through a twisted pair of wires.
After executing auto calibration procedure, it compares this input signal to the actual valve position, which it measures with the Hall Effect sensor that is connected to the feedback module.

The difference between the setpoint and the actual position is then amplified and a corrective current signal is sent to the I/P converter module .
The supply pressure to the FY500 passes through an internal pressure regulator that regulates it to approximately 22 psi. The air then goes through an orifice that restricts the flow and air consumption.
The I/P converts the current signal to a pneumatic signal, which is sent to the diaphragm module and the spool valve.
The spool valve directs supply air to the actuator to move the valve until the Hall Effect Sensor reading agrees with the setpoint.

- Mounting on linear actuators according IEC 60534-6, stroke from 12 mm to 200 mm;
- Mounting on rotary actuators according VDI/VDE 3845, NAMUR, from 30° to 120°;
- Rotary digital indicator with 4 ½ numeric digits and 5 alphanumeric characters;
- Configuration and local adjustment with LCD interface;
- Automatic tuning procedure (Auto-Tuning) of PID parameters for control adjustment;
- Flow characterization: linear, equal percentage, fast opening or configurable;
- Air supply: 2 – 10 bar (30 – 150 psi);
- Spool valve with high volume output (20.5 Nm3/h at 4.1 bar) and minimum steady-state air consumption (0.49 Nm3/h at 4.1 bar);
- Position transmitter with 4-20 mA current feedback incorporated in the FY500 Hart terminal;
- Designed to meet explosion proof and intrinsic safety specifications.

Accessories

HI331
Bluetooth HART® Interface

The Bluetooth HART® HI331 interface is designed to connect PCs to HART® networks via Bluetooth wireless technology. Once the HART® side is connected, the user application software can configure, monitoring and report with HART® instrumentation located up to 83.8 meters away.

- Bluetooth v2.0;
- Internal antenna;
- Rechargeable lithium battery by mini-USB connector;
- Meets HART Physical Layer Spec HCF_SPEC-54;
- Reinforced connectors;
- 128-bit high-security encryption;
- Compact size: 2.00 "x 2.75" x 0.80 "(50mm x 70mm x 20mm);
- Robust ABS plastic cabinet;
- 100% tested unit;
- 1 year warranty.

PBI-PLUS
Advanced PROFIBUS PA Interface

PBI-PLUS is a USB communication interface used to connect PROFIBUS PA devices with any maintenance or asset management system based on FDT/DTM technology, like AssetView. The dedicated application ProfibusView is ready to be used with PBI-PLUS. The installation driver creates a virtual serial port that allows local or remote configuration in the PROFIBUS PA network. Thus, this powerful interface offers great advantages as the possibility of workbench application, where no extra power supply or coupler DP/PA are needed, or alternativelly, it creates a seamless connection to the operational PROFIBUS PA channel without interruptions.

FDI302-PLUS
Fieldbus Communication Interface for Firmware Update to 302/303 Revamp Platform

The FDI302-Plus Smar interface, Field Device Interface 302, allows firmware update of the FOUNDATION fieldbus and PROFIBUS PA field devices using a computer and FDI302-Plus utility software, available at Smar website.

Some features:

- Compatible with DC302 and DC303 and also all revamp field devices of Smar 302 and 303 series;
- Powered by computer, it does not need external power supply;
- USB connector;
- Easy and quick installation.

IF300 Series

Triple Channel Current to Fieldbus Converter

The IF300 Series is a special group of devices for the transition of systems that still have conventional instrumentation with analog 4-20 mA or 0-20 mA signals. It allows up to 3 analog signals to be converted into fieldbus signals through fieldbus analog input function blocks. They are available in FOUNDATION™ fieldbus or PROFIBUS PA technologies.

- Power supply (H1 bus): 12 mA @ 9 to 32 Vdc;
- Analog input signal accepts any values between 0-20 mA;
- Three 0/4-20 mA current inputs with external power supply;
- Accuracy: ±0.03%;
- Material: Aluminum or 316 SST;
- Configuration through an engineering station or magnetic tool;
- Hazardous Area Certification: explosion proof, weather proof and intrinsically safe;
- Function Blocks:
    - Up to 20 dynamically instantiable function blocks for the IF302 with backup master capacity (LAS);
    - 1 Physical (PHY), 3 Transducers (TRD), 3 Analog Input (AI), and 3 Totalizers (TOT) for IF303;
    - Fail safe functions.

FI300 Series

Triple Channel Fieldbus to Current Converter

The FI300 Series is a special group of devices for the transition of systems that still have conventional instrumentation with analog 4-20 mA signals. It allows up to 3 fieldbus control signals to be converted into 4-20 mA output current. They are available in FOUNDATION™ fieldbus or PROFIBUS PA technologies.

The converted signals can be used for speed control in frequency converters, valve positioners, electric actuators, and other 4-20 mA inputs devices.

- Power supply (H1 bus): 12 mA @ 9 to 32 Vdc;
- Digital input signal: FOUNDATION™ fieldbus (FI302), PROFIBUS PA (FI303);
- Three 4-20 mA current outputs with external power supply;
- Accuracy: ±0.1%;
- Material: Aluminum or 316 SST;
- Configuration through an engineering station or magnetic tool;
- Hazardous Area Certification: explosion proof, weather proof and intrinsically safe;
- Function Blocks:
    - Up to 20 dynamically instantiable function blocks for the FI302 with backup master capacity (LAS);
    - 1 Physical (PHY), 3 Transducers (TRD), 3 Analog outputs (AO) for FI303;
    - Fail safe functions.

FP300 Series

Fieldbus Converter for Pressure

The FP300 Series pressure converters are designed as interface for FOUNDATION™ fieldbus or PROFIBUS PA system, with a pneumatic actuator or a valve positioner. The FP300 series provides a pneumatic output signal proportional to an input received from FOUNDATION™ fieldbus or PROFIBUS PA networks. The technology used in the FP300 Series allows easy interfacing between the field and the control room, and it has several interesting features that considerably reduce the installation, operation, and maintenance costs. The function blocks concept has been introduced to make programming easier to users, who can now build and visualize complex control strategies. Present additional advantage in flexibility, once allow changing the control strategy without changing the wiring or any hardware. They can be locally configured using a magnetic tool, without having to open the device, eliminating the need for a configurator in many basic applications. The FP300 series is suitable for output pressures ranging from 3 psi to 15 psi or 3 psi to 30 psi extended range version. Besides the local settings, the FP300 Series can be configured remotely via applications that meet the FOUNDATION™ fieldbus or PROFIBUS PA standards. Smar makes available to its customers applications for both communication protocols, for where pneumatic actuators are indispensable or in plants that are still migrating from pneumatic to digital technology. The FP300 Series was designed to meet IP66 weather-proof requirements and has been submitted and approved for explosion-proof or intrinsically safe areas.

- Input: Digital only. FOUNDATION™ fieldbus or PROFIBUS PA with bus power;
- Output: 3-15 psi (0.2-1.0 kg/cm²) or 3-30 psi (0.2-2.1 kg/cm²);
- Output capacity: 6.7 Nm³/h (4 scfm);
- Accuracy: 0.4 % of span;
- Bus powered: 9-32 Vdc;
- Quiescent current consumption: 12 mA.

HCC301

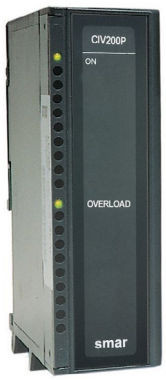
HART® to Current Converter

The HCC301 is a HART® Current Converter that transforms a digital variable obtained via HART® communication into an analog current signal, allowing this variable to be monitored or controlled.

- Two-wire, 4 to 20 mA output signal, in compliance with NAMUR NE43 specification, with super-imposed digital HART® Protocol communication;
- 1500 Vdc insulation;
- Power supply 12-45 Vdc;
- 0.04% Accuracy;
- 120 ms response time;
- HART® network primary master;
- Allows access to a secondary master.

CIV200P

Current to Voltage Converter



The CIV200P is a non-insulated current-to-voltage converter. It allows working with a remote current input from 4 to 20 mA generating a selectable output via "jumper" to obtain one of the following configurations: 0 - 9 Vdc, 0 - 10 Vdc, 0 - 12 Vdc, 0 - 15 Vdc, 0 - 20 Vdc or select the manual mode, where, through a 5K potentiometer connected to the terminal block, the output voltage of the converter can be adjusted.

- Output: 0-9 Vdc, 0-12 Vdc, 0-16 Vdc or 0-20 Vdc
- Optional: 4-20 mA

Remote Indicator

IR290

4-20 mA Remote Indicator

The IR290 is a 4-20 mA remote indicator, used for monitoring analog variables in industrial and laboratorial processes with an accuracy of 0.1%. The local adjustment via the magnetic tool simplifies configuration done by the operators. It allows calibration from the 4-20 mA signal as well as the factory backup configuration which is password protected. It has several engineering units such as: mA, %, pressure units, temperature, flow, volume, density, etc.

IR303

Remote PROFIBUS PA Indicator

IR303 is a PROFIBUS PA remote Indicator which works with any PROFIBUS DP Class 1 master to display the output of remote PROFIBUS PA devices. Up to eight cyclical variables from either one device or eight different devices can be monitored. The IR303 is distributed on the PROFIBUS PA bus and allows the user to visualize devices at easy-to-access locations without moving to the actual location where devices are installed, or entering difficult-to-access or hazardous sites. It is a perfect match to work with the TT383 - Eight Input Temperature Transmitter with PROFIBUS PA.

JB400

Smart Junction Box for 4, 6, or 8 Spurs

- Smart Junction Box for fieldbus installations in compliance with the IEC61158-2 standard (PROFIBUS PA and FOUNDATION™ fieldbus), and for AS-i networks;
- 4, 6, or 8 spurs;
- Offers protection against short-circuits in the spurs (between + and – terminals of F, P, and A models), in the powering (between + and – of the power supply for B, M, and D models), limiting the current so that the short-circuit does not propagate. After removing the short-circuit, the spur/powering goes back to normal operation;
- Fast and easy installation;
- Maintenance during plant operation.

JM400

Junction Box for FOUNDATION™ fieldbus, PROFIBUS PA, and 4-20 mA + HART® devices

Smar junction boxes were especially designed to facilitate fieldbus (FOUNDATION™ fieldbus and PROFIBUS PA), HART®, and conventional instrumentation (4-20 mA) connections. The IP66/68 rated enclosure combined with appropriate cable glands, protects the wire connections from dust, water, oil, and moisture. They may be used indoors or outdoors, and can withstand the most severe environments.

Its design allows easy access to the terminals, without using special tools. The terminals are twin type at the four ends. They can be used as bus input and output according to the application convenience, keeping apart the wires that should be disconnected in case of device maintenance. This arrangement makes possible the disconnection of a single device keeping the continuity of the bus.

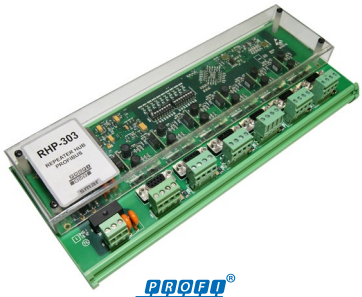
The JM400-C3 offers protection against short-circuits in the spurs (between + and – terminals), limiting the current to 50 mA on each. Thus, the short-circuit does not propagate between the spurs nor in the main trunk. This option has short-circuit indication LED and built-in terminator. In normal operation, each protection short-circuit has less than 1 mA of current consumption. After removing the short-circuit, the spur goes to normal operation and the protection circuit is disabled, turning off the LED.

RHP303

PROFIBUS DP/ Modbus RTU Hub Repeater

The RHP303 is a modular repeater designed to support the requirements of PROFIBUS networks and systems.

- Ideal for dense networks;
- Bus segmentation and isolation in areas subjected to electromagnetic interference;
- Increase the system availability;
- Increase the cabling distance up to 1200m per channel;
- Baud rate from 9.6 kbits/s to 12 Mbits/s;
- Increase the number of devices up to 32 per segment;
- Use in hybrid topologies allowing spurs and tree/star topologies;
- PROFIBUS hub;
- 5 isolated channels with transient protection;
- No limits for repeaters in series or cascades;
- Economic, robust and easy installation solution;
- Applicable in Modbus RTU networks.



DF125

PPP Router (Point-to-Point Protocol)

Telecommunications structures used in wide area plants typically provide remote area communication with RTUs (Remote Terminal Unit), via serial MODEMs.

The DF125 is designed to be connected between the MODEM's serial interface and the RTU's ethernet local area network (LAN), providing the PPP Router(Point-to-Point Protocol) functionalities that allow IP connectivity from the RTUs to the MTU (Main Terminal Unit).

For this to happen, via AT commands over the serial port, the DF125 configures and requests the MODEM to establish a PPP connection with a server at the MTU. From then on, all protocols used by the Smar RTU can be encapsulated via serial PPP protocol and transmitted via the telecom infrastructure.

Main Features

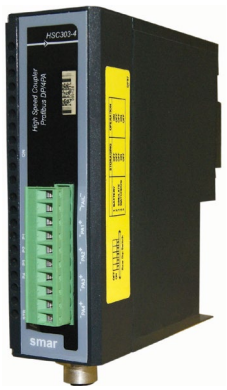
- PPP over the serial port;
- IP address translation;
- Webserver configuration;
- Low power consumption;
- Modular design DFI302.

HSC303

High Speed Coupler PROFIBUS DP/PA for 2 or 4 channels

The HSC303 is a high speed coupler PROFIBUS DP/PA, up to 12 Mbits that provides a seamless integration between PROFIBUS DP and PROFIBUS PA segments. The HSC303 requires no configuration and is transparent to the PROFIBUS DP master, i.e., it does not need a PROFIBUS address.

- Transparent from 9.6 kbps up to 12 Mbps;
- Can directly replace non-Ex PROFIBUS PA couplers;
- Options for 340 mA or 500 mA maximum current per PROFIBUS PA channel;
- Can be used with intrinsic safety barriers.



SUP303

PROFIBUS DP Transient Suppressor and Anti-surge

The SUP303 has advanced technology for protection in three stages. Its advanced components work in peaks of high voltage and short duration, high current, high voltage, low impedance with fast response and effective protection against ESD and EMI. The SUP303 circuits were developed to provide effective and coordinate protection in reaction to a transitory at the PROFIBUS DP port. The primary stage protects from the exposition to an excess of transitory voltage, at a lower level. When the current transient exceeds the trigger limit, the second stage responds in microseconds, thus limiting the current. The third stage keeps the voltage within the PROFIBUS DP drive limits.

- The SUP303 is a protective device against transients and surges in PROFIBUS DP networks;
- Easy to install on DiN rail, it can be connected on every network segment or node. it guarantees the integrity of PROFIBUS signals against lightning, transients or voltage peaks;
- Whenever the effective distance is longer than 50m on the horizontal, or 10m on the vertical between two grounded points, the use of SUP303 is recommended at both points;
- In networks with high susceptibility to noises the SUP303 is recommended;
- Works at 9.6 kbits/s to 12 Mbits/s;
- Increases the PROFIBUS network operational safety;
- Increases PROFIBUS network availability;
- Can be used with Modbus 485.

WSP300

Smart Protector for 4, 6, or 8 spurs

WSP300 offers protection against short-circuits in the spurs (between + and – terminals of Foundation fieldbus or PROFIBUS PA), in the powering (between + and – of the power supply for PROFIBUS DP and Modbus), limiting the current so that the short-circuit does not propagate. After removing the short-circuit, the spur/powering goes back to normal operation.

- 4, 6, or 8 spurs;
- Intelligent protection against short-circuit in each spur, preventing the short-circuit propagation;
- For panel mounting or field installation in junction boxes;
- Integral part of JB400 – Intelligent Junction Box;
- Fast and easy installation;
- Maintenance during plant operation.

BT302

FOUNDATION™ fieldbus & PROFIBUS PA Terminator

The BT302 is a fieldbus bus terminator specifically designed for industrial plant applications. This device has been developed to comply with the requirements of IEC 61158-2 standard, and it can be used in safe or hazardous areas, to meet the intrinsic safety standards requirements. The BT302 device can be installed in panel or in distribution boxes.

- Maximum operational voltage: 35 Vdc;
- Input impedance: 100 Ω ± 2% @ 7.8 - 39 KHz;
- Intrinsic safety: FM, CEPEL, DMT, and CE.

AT303

PROFIBUS DP Active Terminator

The AT303 is an active terminator developed to increase the PROFIBUS DP network availability and facilitate accessing any node on the PROFIBUS DP bus without putting the network in an intermittent condition. This way, any network slave can be switched off, removed, or replaced without harming the communication, especially when the terminators are enabled on the network end slaves.

- 24Vdc insulated power supply;
- Galvanic insulation;
- Speeds from 9.6 kbits/s to 12 Mbits/s;
- LED for power supply indication;
- One PROFIBUS DP frontal DB9 connector;
- One connector PROFIBUS DP terminal block.

Power Supply

DF50/DF56

Power Supply for Backplane

These redundant power supplies work independently or together with another redundant power supply module to ensure constant power supply to the DFI302 Smar control and process automation platform. When two redundant power supplies are used, in the failure condition, the backup will assume automatically the operation. A relay is provided to indicate failure on each power supply, indicating to the user when necessary to replace the faulty one.

- Input: 127 to 135 Vdc or 90 to 264 Vac (DF50), 20 to 30 Vdc (DF56);
- Outputs: 5 Vdc @ 3A: distributed by the internal bus through the DFI302 racks, to power the DF Modules circuits;
- 24 Vdc @ 300 mA: for external use via terminals;
- Power consumption: 72 VA (DF50), 42 W (DF56).

DF52/DF60

FOUNDATION™ fieldbus H1 & PROFIBUS PA Power Supply

These modules were specially designed to power the fieldbus networks. These power supplies are non-intrinsically safe devices with a 24 Vdc output, isolated, with short-circuit and overcurrent protection, besides failure indication.

- Input: 127 to 135 Vdc or 90 to 264 Vac (DF52), 20 to 30 Vdc (DF60);
- Output (Voltage): 24 Vdc ±1%;
- Current: 1.5 A (DF52), 850 mA (DF60);
- Output for failure indication: 1 A, 30 Vdc SPST (Closed contact).

DF53/DF98

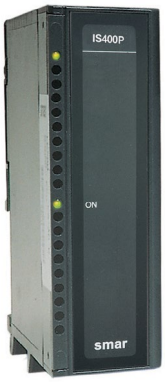
Impedance for FOUNDATION™ fieldbus Power Supply

These modules were specially designed to provide appropriate impedance for H1 fieldbus networks in compliance with the IEC61158-2 standard in non-hazardous areas. The DF98 model has 2 ports and the DF53 has 4 ports. They have selectable bus terminators and control the network impedance in an active and non-isolated way for a broad frequency range.

- Input: 24 to 32 Vdc +/- 10%;
- Output: DF53: 340 mA per port | DF98: 500 mA per port;
- Maximum power dissipated: DF53: 2.26 W per port;
  DF98: 3.43 W per port;
- Ambient Temperature Limits: 0 to 60 °C (32 to 140 °F).

IS400P

Power Distributor and Isolator



The Power Distributor and Isolator IS400P can be used in two ways: as power supply for two-wire transmitters, providing isolation between inputs and outputs, or to isolate 4-20 mA or 1-5 Vdc signals between inputs and outputs.

- Input: 4-20 mA using the integral power supply for two-wire transmitters, 4-20 mA, 1-5 Vdc;
- Output (A/B): 4-20 mA / 4-20 mA, 1-5 Vdc / 4-20 mA, 1-5 Vdc / 1-5 Vdc;
- Accuracy: 0.15%;
- Power supply: 24 Vdc ± 10%;
- Power consumption: 120 mA maximum;
- Ambient temperature limits: 0 to 60 °C (32 to 140 °F).

Systems and Solutions

smar
Technology Company

CD600Plus

Multi-Loop Digital Controller

The CD600Plus is a versatile and reliable single module process controller. It is capable of simultaneously controlling up to 4 loops with up to 8 PIDs and sophisticated strategies with function blocks. It has a powerful multiple I/O channel hardware platform. In a single station, this high-end controller replaces as many as eight traditional controllers, numerous signal and wiring conditioning modules. The high reliability of the CD600Plus has earned a great reputation from a wide range of high-end users.

- Up to 4 independent control loops with up to eight PID functions;
- 8 analog inputs, 8 analog outputs, 8 discrete inputs and 8 discrete outputs;
- Built-in 24Vdc 200 mA power supply for up to 8 field devices;
- More than 120 function blocks are available for user programming;
- Adjustment of control options through the front panel;
- OPC server serial and/or Ethernet for HMI;
- Configuration tools available for download at no cost: CONF600PLUS and TAGLIST;
- Works with the ENET-710 for CDBUS/TCP communication.

LC800

Programmable Logic Controller

The LC800 is a controller with Modbus-HSE protocol that provides greater connectivity and application flexibility to the system. Through I / O modules, HART® protocols and Modbus devices, centralized in the discrete control via ladder logic, it allows a unique and integrated system. The two Ethernet channels ensure high control availability, deterministic peer-to-peer communication between CPUs, monitoring, and even supports redundant, giving the process a high level of security.

- Built-in Ethernet ports;
- HSE-Modbus Controller;
- Internal bus access for up to 64 conventional Input and Output modules;
- Native Ethernet communication (Foundation HSE and / or Modbus TCP);
- Serial Communication EIA-232 (Modbus-RTU and local diagnostics);
- Instantiability capability of up to 1200 function block diagrams IEC 61131 standards and up to 100 Foundation fieldbus function blocks);
- Supervision capacity of up to 2000 points per second;
- Ability to instantiate flexible blocks;
- Ladder language configuration according to IEC 61131;
- Advanced control blocks;
- Redundant operation;
- SNMP support, time recording and OPC communication;
- Built-in Webserver for diagnostics and parameterization.

DFI302

Process Automation and Control Platform

DFI302 is a key element for the Smar SYSTEM302 control system. Its flexible and innovative platform has a modern and economic design for automation architectures and process control of any size to meet the demands of all phases of plant life cycle. Whether in the design phase, commissioning, qualification and training, operation, maintenance or future expansion, the DFI302 maximizes the return on investment for companies of different market segments, since:

- Reduces the engineering costs through its multi-protocol, multiprocessor, and multi-user platform that allows an optimized, modular, and scalable configuration, application-oriented and automation network based on high-speed Ethernet;
- Reduces the time between changes through tasks management and centralized database, besides online changes with the system in operation;
- Allows the use of the most modern and reliable technology of digital networks: FOUNDATION™ fieldbus, PROFIBUS DP, PROFIBUS PA, SNMP, OPC, DNP3, MODBUS, and other IEC standards;
- It is easy to integrate with safety systems and provides high availability through redundancy at all levels of enterprise automation;
- Client/Server distributed architecture and the state-of-the-art SCADA/supervisory system;
- OPC server (DA, HDA, A&E, SNMP) and time stamp records, synchronized via Ethernet network;
- Integrates all plant information, as well as constantly checks the device conditions;
- Totally integrated to the Smar asset management system, AssetView, based on predictive and proactive maintenance;
- Support for work on hazardous areas;
- Supports up to 32 redundant controllers per subsystem;
- It can work as a remote Ethernet I/O to other systems;

General controller technical characteristics:

- Up to 2 integral High Speed Ethernet channels for redundant communication on HSE and/or MODBUS TCP;
- 1 integral EIA232 channel;
- MODBUS (RTU and TCP) gateway;
- Up to 250 FOUNDATION™ fieldbus function blocks instantiation;
- Up to 2000 IEC61131-3 function blocks;
- 1 exclusive channel for Hot Standby redundancy;
- Independent interlocking processing (Ladder Logic Execution) of up to 10 ms;
- Internal bus to access up to 64 I/O modules, such as:
  - Analog Inputs and Outputs:
    - 4-20 mA, 0-20 mA, HART® 0-5V, 1-5V, 0-10V and -10V -10V;
    - Up to 8 isolated inputs or 4 isolated outputs per module;
  - Discrete Inputs:
    - 30 Vdc, 60 Vdc, 75 Vdc 140 Vdc, 120 Vac, 240 Vac, and 264 Vac;
    - Up to 16 points per module;

- Discrete Outputs:
  - Sink or Source transistor, Triac, and NO/NC Relays;
- Universal Temperature Inputs:
  - RTD, TC (B,E,J,K,N,R,S,T,L and U (DIN)), -50 to 500 mV Voltage,0-2000Ω Resistor;
- High Frequency Pulse Inputs:
  - AC and DC;
  - Up to 100 µs.
- Support for dynamic instantiation of standard, advanced and flexible (FFB) FOUNDATION™ fieldbus function blocks;
- Support for IEC 61131-3 programming language;
- Integrated webserver for diagnostics, devices' Live List, and parameterization;

Access channels to the various protocols on the market, depending on the model selected:

- DF63 - HSE Controller and FOUNDATION™ fieldbus Bridge
  - 4 H1 channels (IEC 61158) of 31.25 kbps;
  - It supports up to 64 devices.

- DF73 - HSE Controller and PROFIBUS DP Gateway
  - 1 PROFIBUS DP V1 channel supporting up to 12 Mbps;
  - Class 1 master for cyclic communication;
  - Class 2 master for acyclic communication;
  - It supports up to 124 DP slaves;
  - 2048 PROFIBUS discrete points;
  - 512 PROFIBUS analog points.

- DF75 or DF89 - HSE Controllers
  - Up to 10 ms of Ladder minimum execution time;
  - Up to 1024 I/O points.

- DF95 or DF97 - HSE Controller and PROFIBUS 1DP/2PA or 1DP/4PA Gateway
  - 1 PROFIBUS DP V1 channel supporting up to 12 Mbps;
  - 2 or 4 built-in PA channels (IEC 61158) of 31.25 kbps;
  - Class 1 master for cyclic communication;
  - Class 2 master for acyclic communication;
  - It supports up to 124 slaves (DP and/or PA);
  - 2048 PROFIBUS discrete points;
  - 512 PROFIBUS analog points.

- DF100 - HSE Controller and WirelessHART Gateway
  - 1 WirelessHART® channel (HART® 7 Specification);
  - Up to 100 WirelessHART® field devices;
  - Field devices maintenance via FDT/DTM;
  - Modbus TCP and RTU (RS-485), combined scenario and native addressing;
  - HART® IP Server;
  - IP66 Protection Degree;
  - Operational temperature: -40 to + 85 °C range;
  - Integrated webserver for diagnostic and parameterization.

FRI300 Series

Relay and Dry Contact Input

The FRI300 Series is a fieldbus device that has two built-in relays making integration of Fieldbus to conventional devices such as solenoids, on/off valves, electrical actuators, motors, pumps, starters, etc. The FRI300 Series also has two dry contact inputs. The FRI300 Series Fieldbus Relay and dry contact Input can be located in the field, mounted close to the conventional devices without needing run the conventional wiring to the control room. The FRI300 Series is an integral part of SYSTEM302 but also integrates into other systems that support FOUNDATION™ Fieldbus and PROFIBUS PA.

- Discrete inputs and outputs directly connected to the fieldbus protocol;
- Input: Digital only. Foundation™ fieldbus or PROFIBUS PA with bus power;
- Instantiable Function Blocks, in the case of Foundation™ fieldbus, for regulatory and discrete control in the field;
- DI and DO Function Blocks in push buttons;
- Allows fieldbus connection with conventional discrete equipment;
- Reduces the cost of wiring;
- Foundation™ fieldbus network backup master capability;
- Supports EDDL, FDT/DTMs.

DC302/DC303

Foundation Fieldbus / PROFIBUS PA Remote I / O

Allows easy integration between discrete devices such as push buttons, on / off valves, pumps and mats to the Foundation fieldbus and PROFIBUS PA system via H1 bus. It is a compact module with power, control and I / O integrated into the same equipment, making it easy to use and assemble when compared to other market solutions. The DC302 / DC303 is part of Smar SYSTEM302 solution and can also be easily integrated with other systems with these protocol standards.

- Signals: 16 isolated inputs and 8 isolated outputs;
- Consumption: 150 mA and external power of 18-30Vdc;
- Support for up to 20 Foundation fieldbus blocks;
- Supports flexible function block;
- Master backup capability Foundation fieldbus;
- Supports EDDL, FDT / DTM;
- Protection IP20, VBG4 and others optional explosion-proof housing for mounting on field;
- DIN rail mounting.

Custody Transfer and Fiscal Measurement

AuditFlow

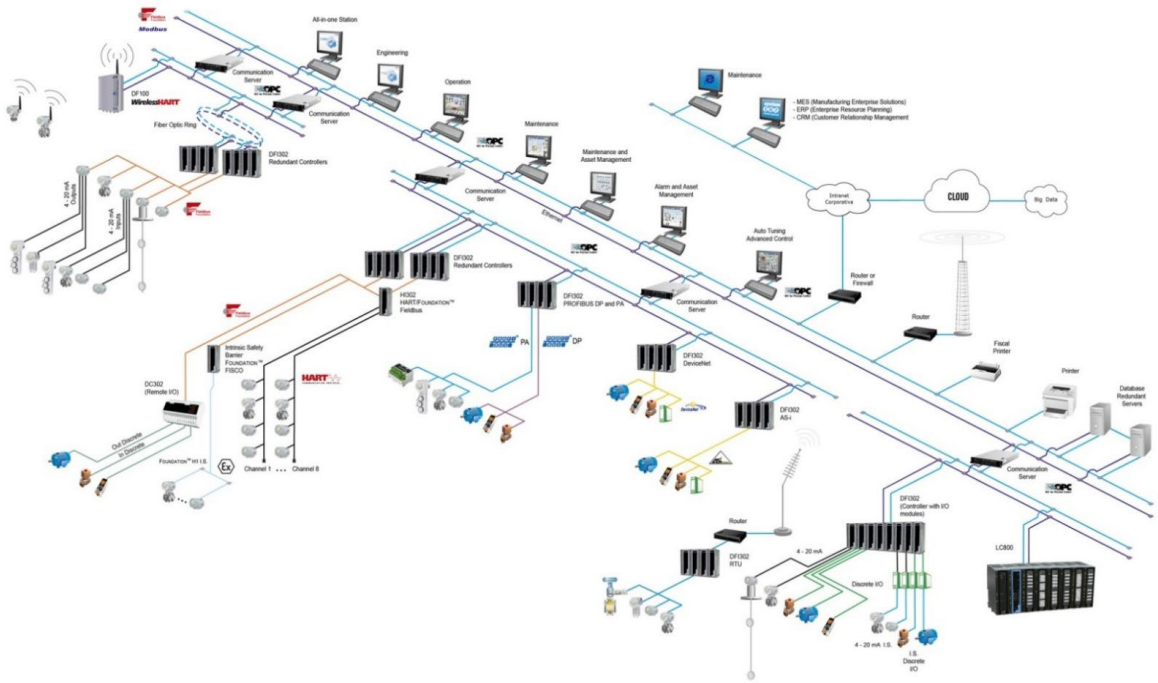
Flow Measurement System

Compliant with up to date international standards for custody transfer applications and flow measurement systems, AuditFlow provides a comprehensive solution for Electronic Flow Measurement. AuditFlow includes real time flow correction calculation, data security, audit trail and support to measuring activities in order to fulfill every requirement for configuration, parameterization and field network inspection. The HFC302 module is the AuditFlow flow computer. It is fully configurable and designed with leading edge hardware and software concepts for measuring, controlling and correcting liquid and gas flow rates. The HFCView software complements this solution with a complete human-machine interface.

- Custody transfer and fiscal measurement;
- Inmetro and NMi certification for liquid and gas in fiscal measurement and allocation measurement;
- NMi Certin B.V. certification in compliance with MID 2004/22/EC (OIML R117-1:2007, EN12405-1:2010, Welmec 7.2);
- Reduced uncertainty with the use of FOUNDATION™ fieldbus digital architecture, thus eliminating the A/D and D/A conversions of conventional systems;
- Compliance with ASME, OIML, GPA, ISO, AGA, API, EN12405-1 and Welmec 7.2 Standards;
- Supported flow meters: differential pressure, turbine, ultrasonic, positive displacement, Coriolis, VCone, Wafer Cone;
- Suitable liquids: crude oil, refined products, lubricating oil, LPG, water and ethanol;
- Suitable gases: natural gas, steam, humid steam, argon, oxygen, nitrogen, carbon dioxide and ammonia;
- Prover types supported: Piston, Ball, Tank and Master Meter;
- Configurable in user-friendly languages as Block Diagrams and Ladder;
- Modular and expansible I/O system;
- Based on international digital communication standards: FOUNDATION™ fieldbus (H1 and HSE), OPC, MODBUS RTU, MODBUS TCP/IP, Ethernet TCP/IP and HART®;
- Report storage in databases;
- Remote SCADA architecture via radio or GSM/GPRS;
- Outstanding applications on exploration and production, well test, allocation measurement, transportation and distribution of gas or liquids.

Smar´s System302 Software Portfolio

The following figure illustrates a typical physical architecture, which can be implemented from System302 solutions. It joins devices, field signals, controllers, server computers and clients workstations, among other components in order to deploy automation and control systems for solving the most diverse challenges of any type of industrial processes and plants.



The subject of this catalog corresponds to the suite of software applications which can run on server computers, workstations and many other devices such as Thin clients, Tablets, Smart Phones and even Smart Watches, which function as user interfaces. It is a set of software modules designed to make the work processes of its users more efficient.

The following diagram illustrates the main System302 software solutions.

smar
Technology Company

Studio302

Integrated Engineering Enviroment

Everything you need to set up networks, devices, and controls in a single easy-to-use environment

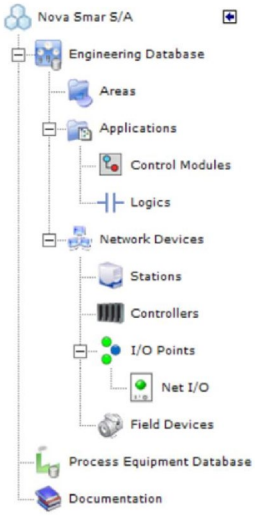
Studio302 is an user-friendly integrated engineering environment which includes all software tools necessary for the configuration, management and maintenance of networks, devices and controls of a control and automation system.

Flexible Architecture Supporting Multiple Workstations

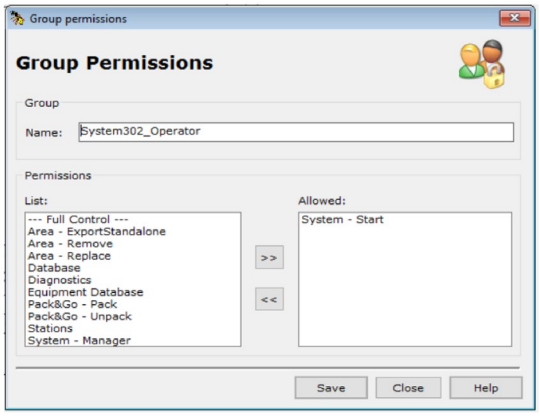
Studio302's Client/Server architecture allows the creation of an Engineering and Maintenance environment for the system consisting of numerous workstations, with controlled access to system configuration and diagnostics.

Single and Integrated Database

The complete system configuration is stored in a single database, ensuring the consistency of the entire application and making its management much easier. This way, once edited at one of the stations, the configuration is automatically updated throughout the system, eliminating the need for repetitive configurations on different machines. Studio302 is also equipped with modification management features which ensure that specific areas of the application are not edited at the same time by more than one user, thus eliminating inconsistencies. Thus, it reduces significantly the complexity of users work processes.



Quick access to physical nodes and logical settings



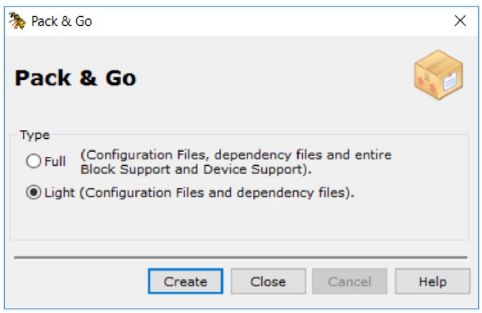
Access Management

Users Integrated to the Operating System

User groups created on Windows operating system can be automatically incorporated into Studio302´s login. And access privileges defined for each professional ensure that each user profile only has access to a certain set of functionality.

Backup and Restore

Studio302 also has resources for creating backup copies of the entire configuration through a simple command.

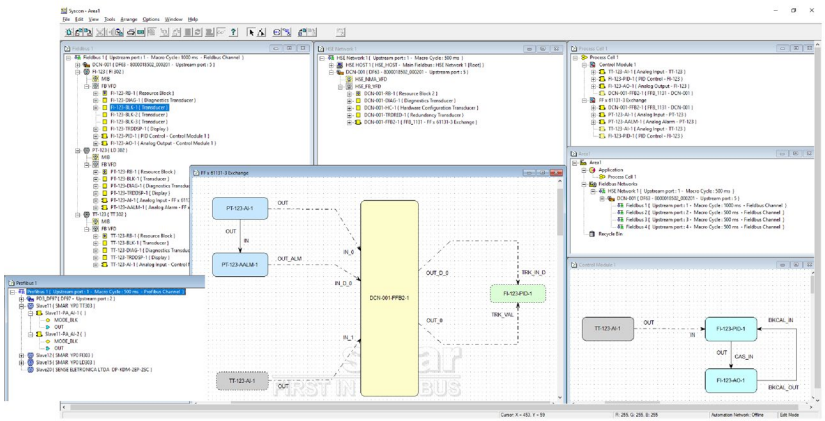


Pack / Unpack for backup and restore functionality

Graphical visualization of the execution of control strategies and logics

Configuration is simplified by being based on the hierarchy and terminology of the ISA S88 standard. And all configuration of devices, function blocks and their parameters is based on tags rather than meaningless addresses.

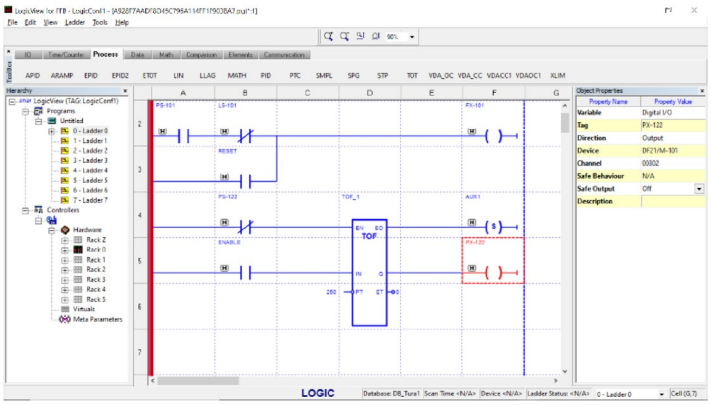
And the mesh settings or discrete logic and control strategies are implemented through easy-to-use graphical tools such as **Syscon** and **LogicView.**



Syscon - Control Strategies with Function Blocks

Quick and Easy Access to Online Information

Online information of variables, diagnostics and other types of device parameters, as well as logics and controls execution status are always available, making tests, adjustments, troubleshooting, etc.



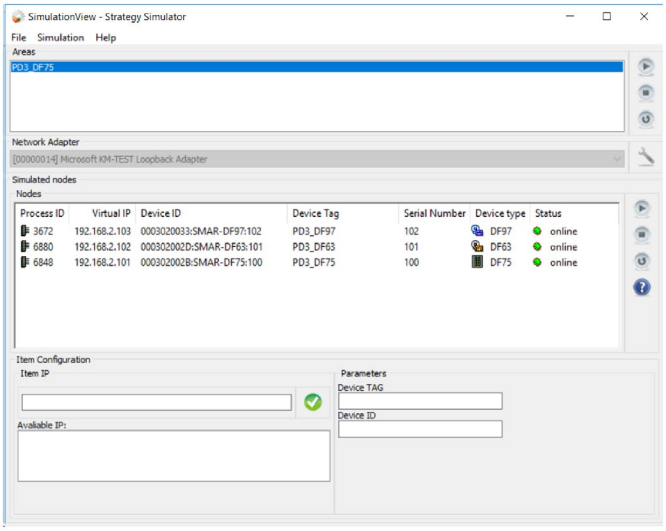
LogicView – IEC 61131-3 logics

Advanced Diagnostic Features for Local and Remote Troubleshooting

In addition to device diagnostics, Studio302 also has advanced features including reports, logs, network analyzers.

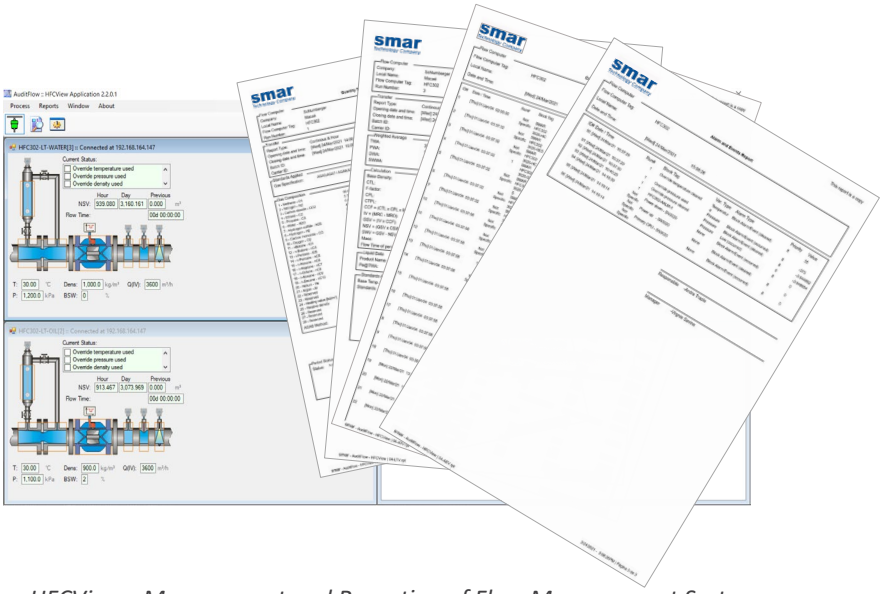
System Simulation

Studio302 also includes a system controllers simulation tool called **SimulationView.** This way, users are able to simulate the operation of controllers for testing or for implementing environments for operation training (OTS - Operator Training Simulator).



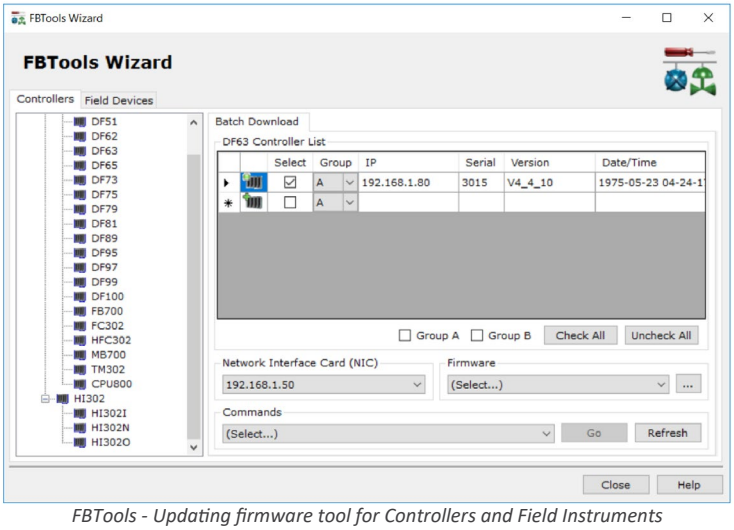
SimulationView - System Simulation

Special Applications
Studio302 also incorporates software tools dedicated to special applications such as **HFCView**, which is a software for supervision, management and reporting of flow measurement systems (AuditFlow) based on the HFC302 flow computer from Nova Smar S/A. Similar to this one, this environment also includes **TMCView** software for managing and reporting tank gauging systems.



HFCView - Management and Reporting of Flow Measurement Systems

In addition to all these benefits and other facilities, **Studio302** also includes several other features to meet your systems management needs, including **LicenseView**, called software license manager, **System302 ServerManager** to manage OPC communication servers, **FBTools** for carrying out device firmware updates, a configuration database manager, tools for parameterizing certain types of devices such as **ProfibusView** for PROFIBUS PA instruments and the **FDT HART Configurator** for HART devices, among others.



FBTools - Updating firmware tool for Controllers and Field Instruments

Regarding OPC communication, SMAR offers a complete set of Classic and UA (Unified Architecture) OPC servers and clients. The so-called Classic OPC includes OPC DA (Data Access), OPC AE (Alarms and Events) and OPC HDA (Historical Data Access). OPC servers are available for the full range of SMAR controllers and other of its Ethernet-connected devices.

In short, **Studio302** constitutes a complete set of software tools for the configuration, operation and management of devices, networks, controls, logics and communications of an industrial process automation system.

AssetView

Intelligent Asset Manager

Transform the power of your intelligent devices into Reliability and Performance

AssetView is an asset management tool for virtually any intelligent device or equipment, such as field instruments, valve positioners and controllers.

Higher EFFICIENCY:
- **Productivity**
- **Quality**
- **Availability**

Lower COSTS related to:
- **Operation and maintenance**
- **Health, Safety and Environmental Risks**
- **Waste and Rework**

This powerful tool allows users to obtain significant reliability and performance improvements through the use of the **diagnostic** information availabe on **intelligent devices.** Online Monitoring and data Storage and Analysis are the basis of its application, which leverages open communication technologies such as **Foundation fieldbus, PROFIBUS, HART** and **WirelessHART.**

The software also includes a set of functionalities to support maintenance activities, aiming to facilitate the execution of reactive maintenance activities, at the same time that it provides resources for the greater use of planned maintenance practices (preventive, predictive and proactive).

Benefits and Features:
- Flexibility through the use of Web browsers as user interface;
- Increase in coverage through the use of open technologies and the consequent possibility of incorporating devices from any manufacturer;
- Higher productive maintenance resulting from the use of AssetView´s powerful resources which facilitate and make the Maintenance Teams work processes much more efficient;
- Results improvements, such as:
  - √ Improvement of operational reliability and efficiency (productivity, quality and availability);
  - √ Reduction of unscheduled downtime and maintenance costs;
  - √ Faster troubleshooting and issue resolution;
  - √ Faster device configuration and commissioning;
  - √ Reduction of accident risks due to equipment failures.

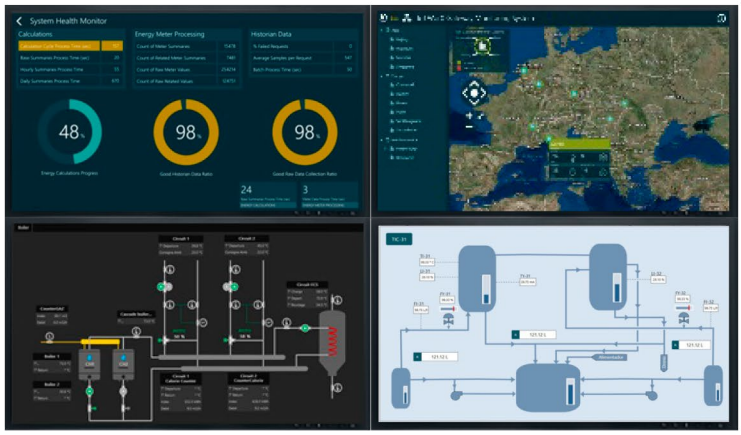
ProcessView64

Operations Environment Software Suite

State of the Art Technology for Operations

Designed to leverage 64-bit platforms and OPC UA technologies, PROCESSVIEW64 allows operators, executives and IT professionals to integrate information in real time in a secure and unified viewing environment, fully Web enabled.

Among the most important points in this set of scalable solutions from SMAR for operations, we must mention its visualization technology that allows access from any desktop or mobile device; its high availability; centralized configuration; and the ability to connect to a wide variety of industry standard communication protocols.



ProcessView64 is a powerful suite of software applications for performing and managing Industrial Plant Operations, including:

- AnyGlass visualization
- Mission-critical redundancy (real-time, historical and alarm information data is always available)
- Powerful Centralized Configuration
- Universal Connectivity
- Minimized Design Time
- Object Oriented Distributed Alarm Management
- Asset organization according ISA-95
- Robust Real-Time and Historical Trends
- Native Geo-SCADA
- Asset visualization in 2D and 3D graphics
- Creation of powerful reusable smart symbols
- Reports
- Configure once and deploy anywhere

AnyGlass Visualization

Bring the visualization of SMAR to any device. Create displays on the desktop that can responsively scale to run on any mobile client. Leverage native apps to provide a consistent user experience on any smartphone or tablet. Access HMI/SCADA applications on any HTML5 compliant web browser. SMAR´s responsive UI technology flawlessly transitions between clients to provide a consistent user experience.

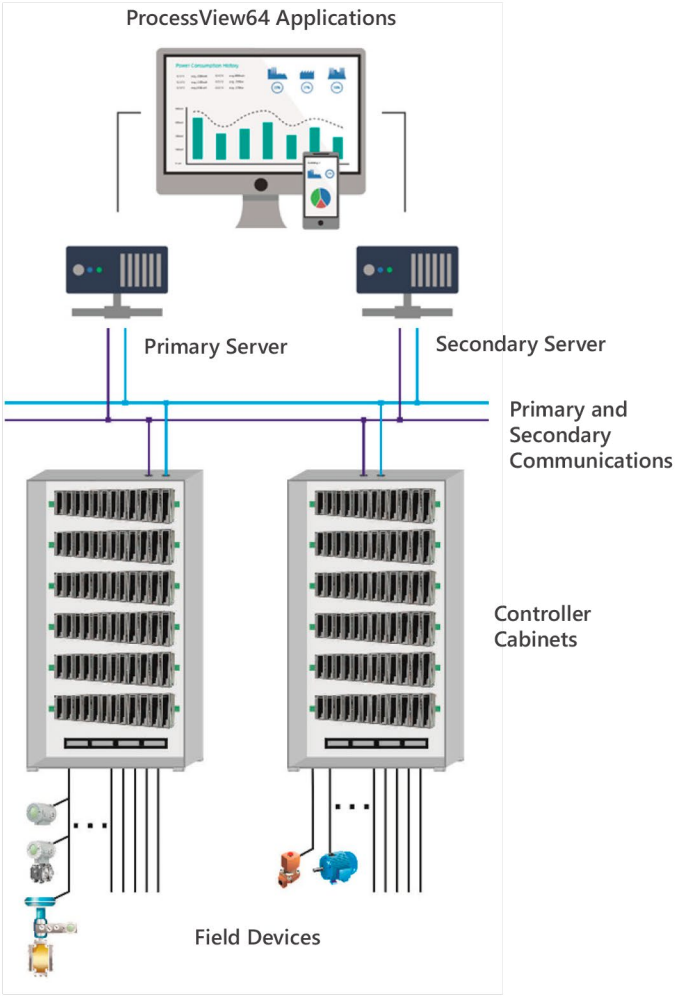
Mission-Critical Redundancy

SMAR ensures the safety of any critical data by offering high availability redundancy for communication reliability. Redundant collectors and loggers serve as a backup in case of a system failure. With automatic fault detection and store-and-forward technology, SMAR users can be assured that mission-critical real-time data, historical data, and alarm information are always available. SMAR redundancy solutions are simple to configure, install, and deploy.

Powerful Centralized Configuration

The Workbench is the multi-functional, centralized configuration environment for all back-end applications, making development more efficient and minimizing design time for any application. Configure assets and historical logging from the same screen. Users can configure and manage their entire **ProcessView64** application from any workstation.

Front-end user interfaces and dashboards are configured using the GraphWorX64 visualization module. Design HMI and SCADA displays leveraging 2D and 3D graphics, integrated parallel projection, preconfigured symbols, dynamic properties, animation, and flexible aliasing.



Mission-Critical Redundancy

Universal Connectivity

SMAR supports industry standard communications such as OPC, OPC UA, Modbus, MQTT, web services, and databases. The solution has been certified for OPC UA compliance by the OPC Foundation as both client and server. Simple device discovery on the network makes integration seamless and efficient.

Minimized Design Time

The largest cost of any automation project is in engineering the application. For an average project, this can be well over 60 percent of the total investment. ProcessView64 greatly reduces configuration effort and minimizes design time, resulting in enormous cost savings and drastically reduced deployment time. SMAR is able to consistently deliver software solutions that run on the latest 64-bit Microsoft operating systems, affordable IoT devices, and Microsoft Azure. Leverage key features of Windows within ProcessView64 and provide users with the greatest application performance, reliability, and flexibility.

Object Oriented Distributed Alarm Management

Enterprise-wide distributed alarm management is provided through AlarmWorX64, SMAR´s native alarming module. Notify your personnel of abnormal conditions and events in real time with ISA 18.2 compliant features. Integrate the AlarmWorX64 Viewer into any SCADA or HMI display to bring to light real-time and historical alarms when and where
operators need to see them.

Asset Organization

ProcessView64 includes an ISA-95 compliant asset organization module called AssetWorX. Assets can be organized and configured in the Workbench with a runtime component critical for scaling large projects while providing intuitive navigation. These hierarchies can optionally include alarms, customizable colors, icons, names, and drag-and-drop functionality.

Real-Time and Historical Trends

Visualize enterprise-wide data in trends, logs, charts, and reports with ProcessView64´s trending module, TrendWorX64. Chart real-time and historical data from any relational database to provide users with actionable data. Customize trends with varying data replay rates, colors, multiple data sources, and multiple cursors. Interact with trends in runtime with multiple playback and filtering functions.

Native Geo-SCADA

SMAR' geographic information system (GIS) mapping module, EarthWorX, provides visualization for widely dispersed assets. Create a geographical overview to monitor multiple locations while maintaining the ability to locate and drill into specific assets. Users can integrate with Google Maps, Bing Maps, and Esri to include additional GIS mapping features and data layers.

HistoryView

High Speed Big Data Plant Historian

The importance of your Data demands a High Speed, Reliable and Robust Plant Historian

SMAR´s HistoryView is an advanced 64-bit high-speed, reliable, and robust historian. Designed for the most mission-critical applications, HistoryView's advanced high compression algorithm delivers unparalleled performance with very efficient use of resources. HistoryView integrates with the latest big data technologies, including Azure SQL, Microsoft Data Lakes, Kafka, and Hadoop. This makes HistoryView the most efficient and secure real-time plant historian for any Microsoft operating system.

Key Benefits and Features:

- High variety of remote data collectors / Collect data from any device, anywhere, following industry standards
- Uses trends and customizable graphics for decision making
- Real-time, historical and archived data replay
- Store and forward critical data
- Integrated performance calculations
- Native report add-in for Microsoft Excel®
- Web-enabled configuration and administration
- Automatic data backup and archiving
- SQL query engine
- Tracing diagnostic data with event logs
- Integrated redundancy
- Seamless integration with other SMAR software
- Fast data collection for enterprise-wide data storage
- Export data to Azure Data Lakes and other cloud storages

Charts, Data Analysis, and Reporting

Choose from a multitude of chart and trend styles to best represent and accentuate real-time and historical data. Use configuration options to customize trends to make data analysis concise and intuitive. Drag and drop data sources during runtime and view multiple trends simultaneously. Enter operator comments as well as manage lab data and audit trails.

HistoryView includes an industry standard SQL Query Engine for reporting and bulk data editing, enabling tight integration with any SQL compatible database such as Microsoft SQL Server, Oracle, and any open database.

Data Merging

HistoryView includes a module for automatic or manual insertion of data, empowering users to import historical or log data from databases, other historians, or intermittently connected field devices and equipment. This also provides for greatly increased reliability in capturing all data, even when network disruptions occur.

Performance Calculations

Customize calculations that can be triggered periodically or on any event, using flexible date/time, mathematical, string, and historical data retrieval functions within the expression editor.

HistoryView-to-HistoryView Connectivity

Merge data collected by distributed servers, while maintaining full system interconnectivity for metrics and analytics. HistoryView-to-HistoryView connectivity can also automatically detect changes in the source data and propagate those to the central HistoryView server, maintaining a unified historical database.

Remote Collectors

Architected as a distributed, enterprise-wide historian, HistoryView remote collectors allow for historical data collection from dispersed locations. Remote collectors ascribe by SMAR' universal connectivity capability including OPC UA, BACnet, and SNMP protocols.

Big Data and Long Term Storage with Data Lakes

HistoryView is designed to handle "hot," "warm," and "cold" data. Hot data is acessible immediately for daily use, warm data is archived but easy to get to for reports and analytics, and cold data has been archived for long term storage or advanced analysis. The HistoryView Data Exporter moves cold data to a variety of external storage systems, such as Azure SQL, Microsoft Data Lake, Hadoop, and Kafka. Securely keep your data for long term storage or use powerful analytics and machine learning to elevate your HistoryView data to new levels and bring even more insight into your processes and systems. Collect your data in one place and turn it into knowledge.

KPIView

Executive Dashboards

Keep Up With Your Operations From Any of Your Devices, Accessing Your Most Important Indicators in Real Time

KPIView is a powerful visualization and analysis tool for executives, managers and other industry leaders.

- *Connect all your devices, manage and browse through your assets with real-time data.*
- *Build dashboards according your specific industry needs.*
- *View the most important performance indicators of your company or of your systems, from any client station or mobile device, and download dashboards seamlessly.*

Advanced KPIView user experience features automatically adjust views (responsive user interface), in addition to providing a vast library of preconfigured symbols.

Key features:

- Self-service Real-time Dashboards for AnyGlass
- KPIs on tablets, phones, Apple Watch, etc.
- Wide variety of industry-specific symbol libraries from which to choose
- Reports creation and distribution
- Drag and drop interactions for easy setup
- Device independence with HTML5 technology
- Leverage powerful analytical tools with business intelligence
- Graphs, Alarms, KPIs and Dashboards, Analytics and Trends, etc.
- IoT and Cloud Ready

iIoTView

Secure Cloud Enablement

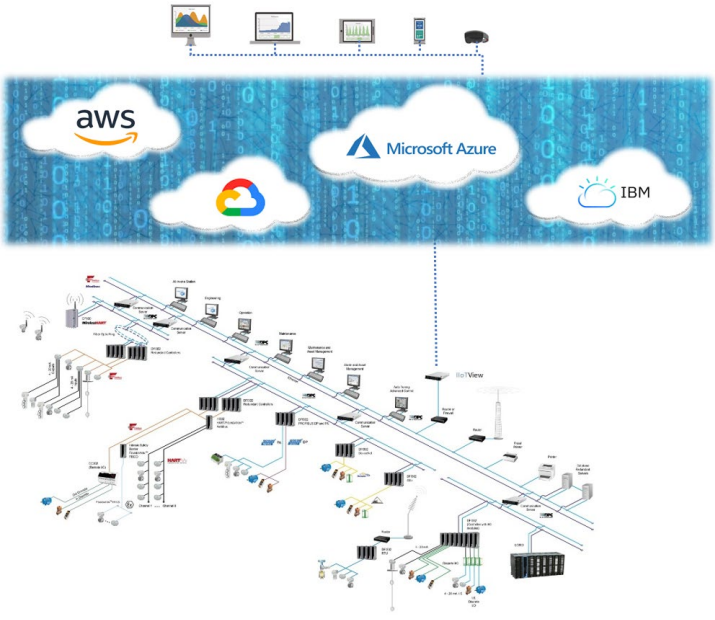
Leverage Your Industry 4.0 Applications with Secure, Real-Time Communications to the Cloud

iIoTView combines SMAR's micro SCADA software technology with its HMI/SCADA, analytical and mobile solutions running in the cloud.

SMAR offers several important IoT technologies, including asset connectivity, secure communications to the cloud , integrated real-time visualization and analysis.

Connection to virtually any automation equipment through industry-supported protocols such as OPC UA, Modbus, SNMP, Web Services and classic OPC tunneling.

- Secure publication of data to the Cloud
- Compatibility with any public or private Cloud
- Visualization on Any Device, Anywhere
- Remote Asset Monitoring and Control
- Analysis execution
- Integration of Existing Equipment
- Historical Data Storage and Forwarding
- Optional use of cloud services, such as Power BI and Machine Learning, for greater depth of analysis



AnalyticsView

Data Analysis Software Suite

Transform large amounts of Plant Data into Actionable Intelligence, in Real Time

SMAR AnalyticsView solutions drive improvement in productivity, efficiency, quality, and sustainability.

The solutions can be applied to solve common business intelligence (BI) challenges, enabling users to move rapidly and easily from data to information, without help from IT or from data scientists.

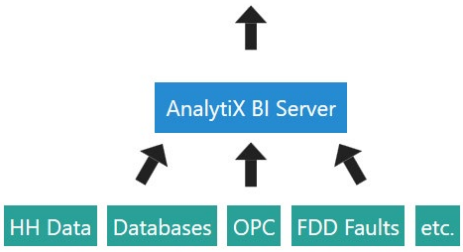
The solutions can leverage technologies such as expert systems and machine learning in Big Data applications, leading to visualization and reporting solutions to address, for instance, quality, efficiency and maintenance issues.

Critical operational information are organized in a user-defined asset catalog and compatible with ISA S95, for analysis, visualization and operation. And Users can expand analysis with their own calculations.

The solution includes two importante tools, AnalytiX-BI and Fault Detection and Diagnostics (FDD).

AnalytiX-BI is a Business Intelligence tool which was created to address the scattering of information and other situations that make it difficult to provide a cohesive view of a system.

It opens up new possibilities for analyzing business intelligence (BI) information within an operational context to reduce costs and maximize efficiency. It improves data accessibility, enables analytical processing, and provides data modeling/ context with incredible performance and intuitive visualization. It offers intuitive point-and-click data models and powerful query technologies that bridge IT, management, and business systems.



Fault Detection and Diagnostics (FDD) technology significantly reduces costs and improves operational efficiency. Fault rules can be customized to predict equipment failures and advise personnel of preventive actions. Before the emergence of FDD software solutions, many organizations relied on institutional knowledge in order to fix or maintain their wide variety of equipment. After the development of FDD tech, this type of info (the numerous symptoms, causes and recommended actions) that may have only existed in the heads of senior personnel or, if lucky, in print or electronic archives, could now be used in algorithms to help organizations move from reactionary “break/fix” maintenance to more modern, more cost-effective predictive maintenance.

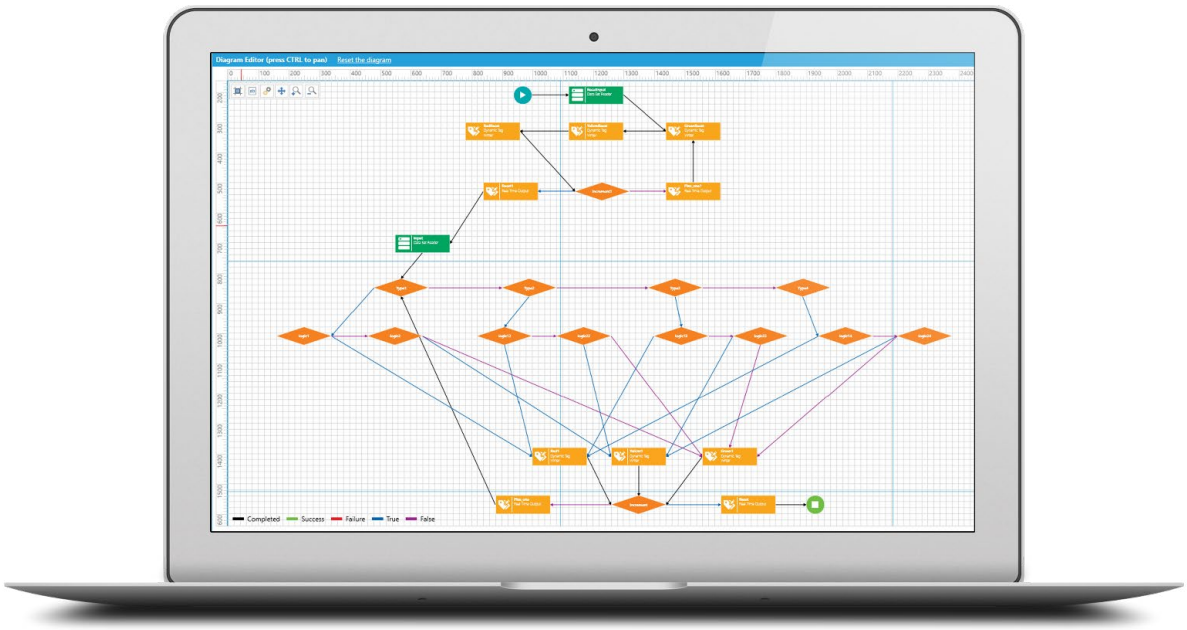
OrchestrationView

Real-time Workflow for Data Bridging

Gain Efficiency by Orchestrating Data Exchange Between Different Systems and Automating Workflows

The OrchestrationView solution enables users to rapidly implement data orchestration and integration tasks that adhere to business logic, without requiring programming.

The solution can access **Microsoft SQL Server, Oracle, Microsoft Access, SAP**, and virtually any real-time or archived manufacturing or business data source.



Key features:

- Highly intuitive graphical tool for developing custom flow logic
- Connectivity to heterogenous data sources
- Defines, calculates and implements work and business rules
- Transaction triggering provide the following trigger types: manual, based on periodic dates and times, on OPC Data Value Change, on alarm, on database value change, On File/Directory Change, etc.
- Redundancy and Load Balancing: Multiple servers can work together to execute transactions, share the load and provide redundancy in events where a server goes offline.

AspectView

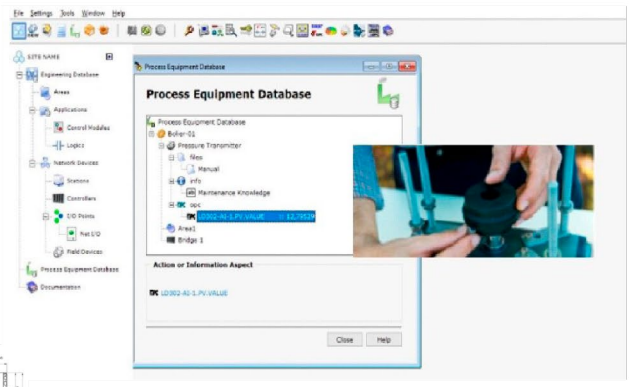
Fast Link to Any Equipment Aspect

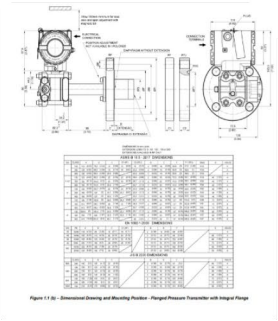
Quickly Access all Relevant Content about your Plant´s Equipment

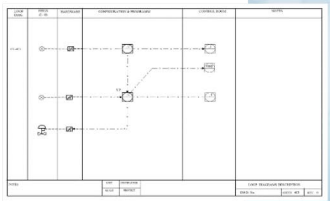
AspectView is a software tool that quickly connects the user to any information and content related to their field instruments, motors, controllers, heat exchangers, boilers, and virtually any equipment in their industry.

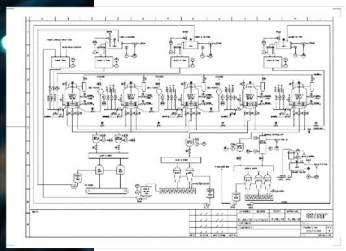
Flexibility to include the most varied aspects or content types related to your equipment, such as:

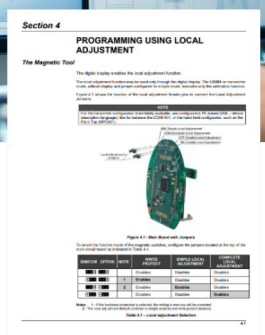
- Instruction Manuals
- Drawings (dimensional, mounting, installation)
- Diagrams (wiring, network, loop)
- Photos, Videos, Audios
- Operational Displays
- Web Pages
- Brochures
- Datasheet
- Spreadsheets
- OPC Tags

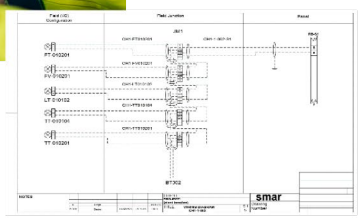












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Connectivity

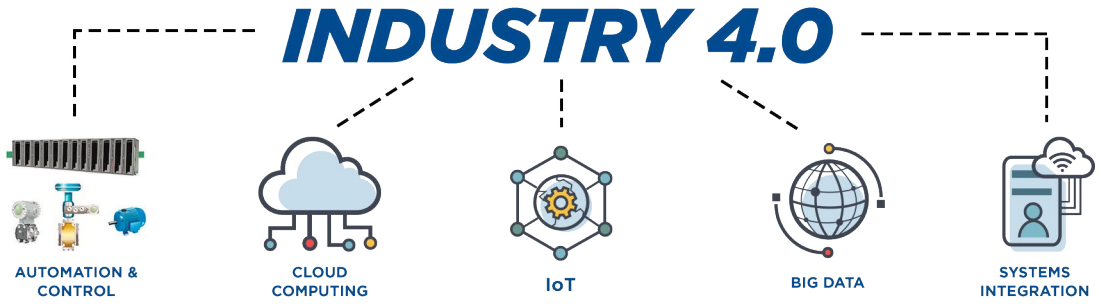
Secure Industrial Communications

Flexibility to Overcome Any Data Connectivity Challenge.

Ready for Industry 4.0

System302 includes powerful data connectivity resources involving Automation, Information, Databases, and Internet of Things (IoT) technologies.

Additionaly to the possibility of using several industrial buses and their standardized and non-proprietary communication protocols, such as HSE - High Speed Ethernet, FOUNDATION fieldbus, HART, AS-Interface (AS-i), DeviceNet, PROFIBUS DP and PROFIBUS PA, System302 also offers a wide range of options for connecting and exchanging data over Ethernet.



OPC Connectivity - Servers and Clients:

- OPC Unified Architecture (UA)
- OPC Data Access (DA)
- OPC Historical Data Access (HDA)
- OPC Alarms and Events (AE)

Direct Connectivity via Communication Protocols and Drivers

- Modbus
- DNP3
- IEC 61580 / IEC 60870
- SNMP
- Drivers for third-party devices, such as Allen-Bradley, Siemens, Omron, Schneider, Mitsubishi, GE, etc.

Cloud Connectivity via IT Standards

- Message Queuing Telemetry Transport (MQTT)
- Advanced Message Queuing Protocol (AMQP)
- Representational State Transfer (REST)
- Websockets

Embedded Technology

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SmarFB

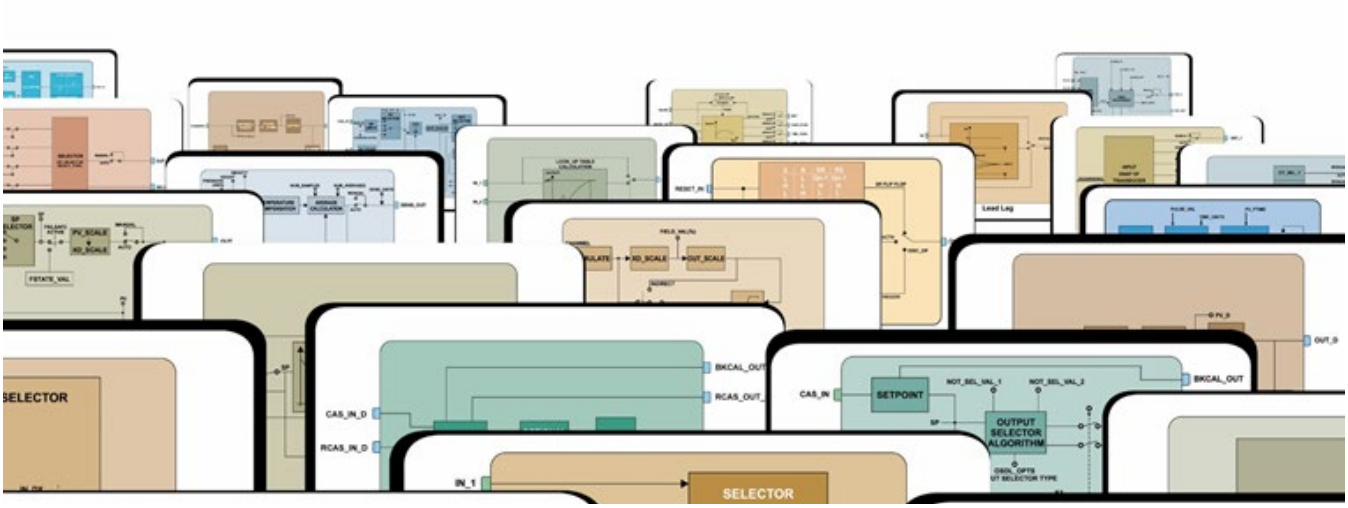
Function Block Library

Standardized Function Blocks, ready to be incorporated into Third Party Controllers and Devices, in a Practical and Sustainable way

Open technologies bring countless benefits, one of which is to foster a culture of collaboration and innovation.

It is in Smar's DNA, who has a wide library of function blocks developed to solve the diverse demands of automation and control. Such blocks have been used for decades in System302 implementations in all continents. And the great news is that this technology can also be used in compatible devices from other manufacturers.

This possibility is due to the open technologies used, including O-PAS, OPC, FOUNDATION Fieldbus and FDI, Field Device Integration. In this way, function blocks can be executed on compatible hardware devices from other manufacturers, such as controllers and field instruments, allowing greater usage possibilities and flexibility of choice for users.



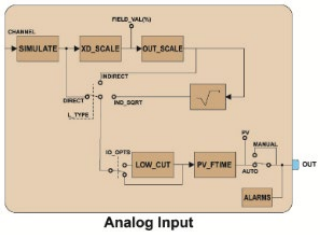
Open technologies make it possible for hardware and software components from different manufacturers to be used together in the same application or subsystem.

Data structures and communications used by the function blocks are standardized to guarantee interoperability. And the complete description of features allows different configuration tools from different manufacturers to handle the configuration, in a standardized way.

The list of available function blocks includes:

Input blocks:

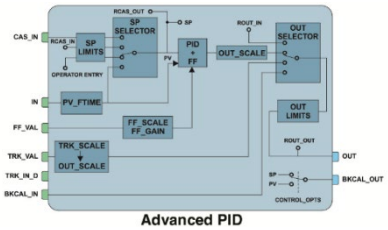
- Analog Input, AI
- Discrete Input, DI
- Pulse Input, PI
- Analog Input, MAI
- Multiple Discrete Input, DI



Analog Input

Control and calculation blocks:

- PID Control, PID
- Enhanced PID Control, EPID
- Advanced PID Control, APID
- Splitter, SPLT
- Set Point Ramp Generator, SPG
- Output Selector, Dynamic Limiter, OSDL
- Step Output PID, STEP
- Arithmetic, ARTH
- Signal Characterizer, CHAR
- Integrator, INTG
- Analog Alarm, AALM
- Input Selector, ISEL
- Timer, TIME
- Lead-Lag, LLAG



Advanced PID

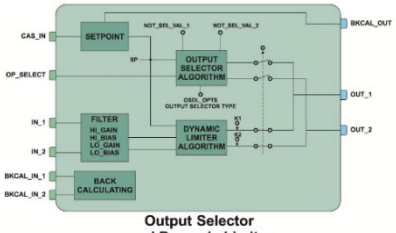
- Density, DENS
- Constant, CT
- Flip-Flop and Edge Trigger, FFET

Output blocks:

- Analog Output, AO
- Discrete Output, DO
- Multiple Analog Output, MAO
- Multiple Discrete Output, MDO

Transducer/resource blocks

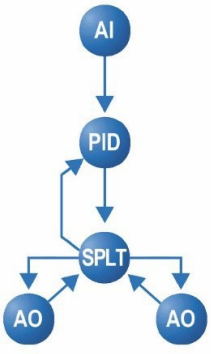
- Resource, RS
- Transducer, TRD
- Diagnostic Transducer, DIAG
- Display Transducer, DSP



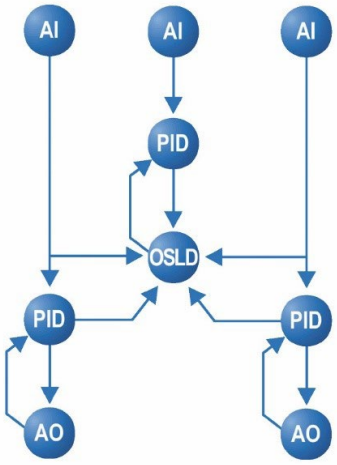
Output Selector and Dynamic Limiter

These function blocks can then be used to compose a multitude of continuous and discrete control strategies, as shown in the illustrative examples below.

This way, SMAR seeks to strengthen the entire automation market, providing to other companies and suppliers greater agility in developing solutions through the incorporation of proven technology to their products, while allowing greater freedom for users to select hardware and software components best suited to their objectives.



Split Range Control



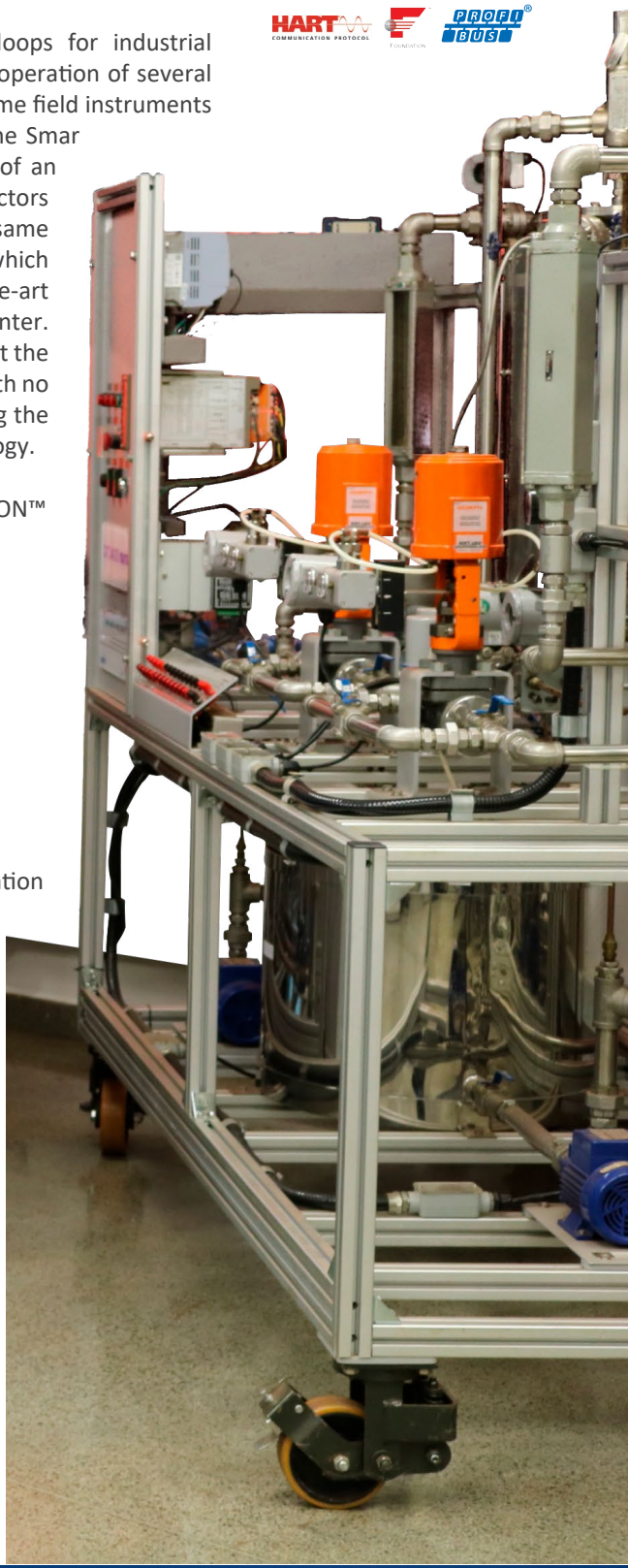
Cross Limited Combustion Control

Control Module Examples

Didactic Products

PD3
Didactic Pilot Plant

Smar Didactic Pilot Plant, trainings and technical update in control loops for industrial automation processes, reproduces in a simple and objective manner, the operation of several control loops that can be implemented for an industrial plant. Using the same field instruments and software tools that configure and operate large scale applications. The Smar Didactic Pilot Plant compact structure represents all of the components of an automation control, which can be manipulated and monitored by instructors and learners. Control loops in the Smar Didactic Pilot Plant reproduces the same characteristics found in an industrial plant by field instrumentation experts, which means learners, as well as their instructor, are provided with the state-of-the-art technology available in the market, on their own Learning and Practice Center. The Didactic Pilot Plant incorporates previously configured control loops, but the flexibility to configure the devices allows new control loops to be created with no need to restructure the physical location of the devices, therefore adapting the Didactic Pilot Plant performance and integration to any teaching methodology.



- Available for the most modern technologies: HART®, FOUNDATION™ fieldbus and PROFIBUS protocols;
- Easy to install, operate and execute maintenance;
- The most flexible, modern and robust in the market;
- Distinct mechanical characteristics;
- Compact lightweight structure in Aluminum;
- Easy to move and transport, no need to disassembly any element;
- Device configuration flexibility;
- Simulate a real industrial plant using the state-of-the-art technology;
- Configure and control the main measuring variables of a real plant;
- Control loops previously provided by Smar;
- Create custom control loop strategies;
- Designed for students and professionals in the Control and Automation Area;
- Wheels at the base of the structure facilitate transportation;
- Tanks and tubes built in Stainless Steel;
- Command and Operation Front Panel;
- Monitored and operated by one or several remote supervision workstations.

Smar understands the importance of being as close as possible to a real industrial plant during the learning process for technicians, engineers and Instrumentation students. Smar has a dedicated division for the interface between educational institutions and the company. In addition, Smar provides optional didactic kits, instruments, support and specialized training for schools and training centers. Smar noticed the importance for new technicians and engineers of being closer to a real industrial plant during the learning process, and the Didactic Pilot Plant provides control and supervision processes in a compact system but consistent to the Industrial Automation environment.

The world's only O-PAS™ ready didactic and pilot plant.
OPEN PROCESS AUTOMATION STANDARD

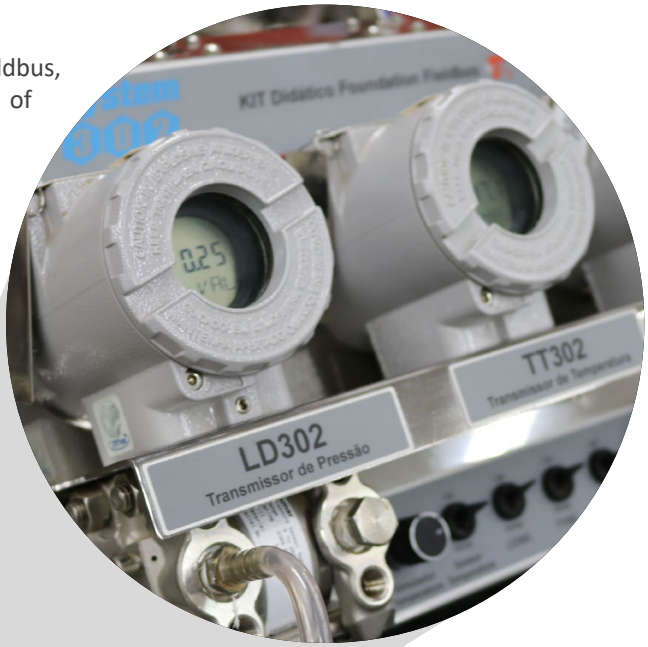
Didactic Kits

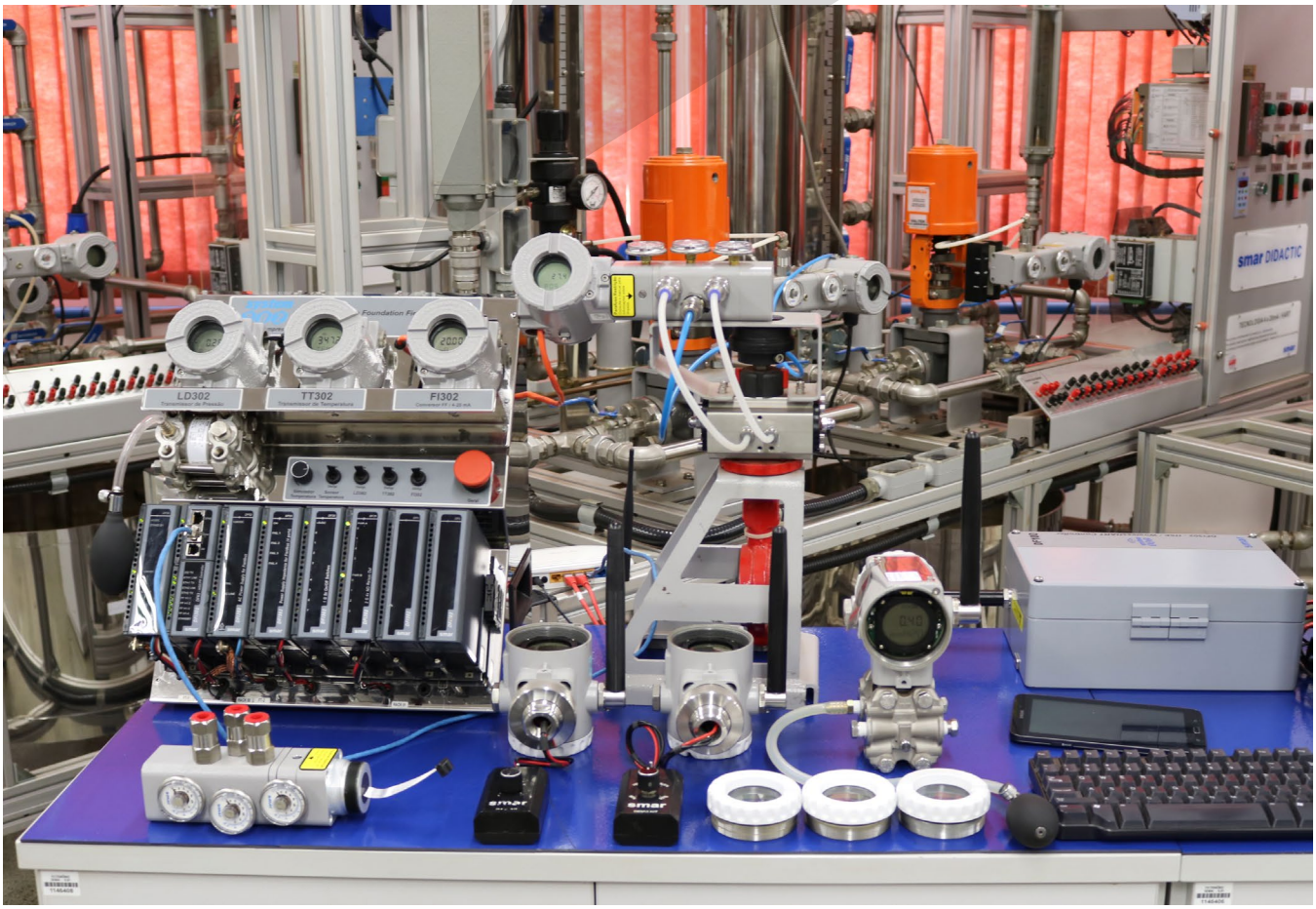
The new Smar didactical kits are available on FOUNDATION™ fieldbus, PROFIBUS DP and PROFIBUS PA technologies (with possibility of PROFIBUS DP+PA on the same kit), HART® and WirelessHART.

One of their major differentials is the possibility of communication between the different technologies.

The new didactical kits work as Mini-Didactical Plants. Teachers and instructors get a powerful tool on the tuition of industrial automation and industrial networks, since with they provide practical classes of most subjects included in the grid of the best professional formation courses on the sector. Get to know them by asking a visit from our sales team.

Smar Didática, spreading Industrial Automation knowledge.





Services and Support

smar
Technology Company

Services and Support

SMAR offers customers first-class technical support and services with a highly specialized, experienced team. We guarantee the maintenance of your system by supplying quality spare parts and services rapidly, in all stages of the project and plant maintenance.

smar
TECHNICAL ASSISTANCE

Online Support

We provide information and technical support via the Internet at www.smar.com/en/technical-support , where customers can find detailed information about SMAR products and services. Registered users may submit technical questions and visit the Most Frequent Asked Questions section. Responses are quick, usually in less than 24 hours, by chat, e-mail (techsupport@smar.com.br) or telephone (+55 16 3946-3611). Our support team is made up of qualified engineers and technicians who provide basic consultation and assistance for initial configurations and engineering.

SMAR also offer preventive maintenance contracts for systems and field devices.
More detail, see: www.smar.com/en/technical-support

Technical Assistance

SMAR provides a technical assistance. Requests can be submitted by phone and/or email below:
• Phones: +55 (16) 3946-3594 and +55 (16) 3946-3599 (business hours)
• Email: assistencia.tecnica@smar.com.br

The Technical Assistance and Support Departments provide the following services:

- Electrical installations and instrumentation projects;
- Execution or supervision of instrumentation and electrical installations;
- Certifications for installation of analog or digital instrumentation;
- Pre-commissioning and commissioning of systems;
- Plant start-up follow-up and support;
- Assistance to the project operation;
- Support during plant outages for corrective, preventive and predictive maintenance;
- Emergency device support and repairs.

Assembly of Control Cabinets, Commissioning and Start-up

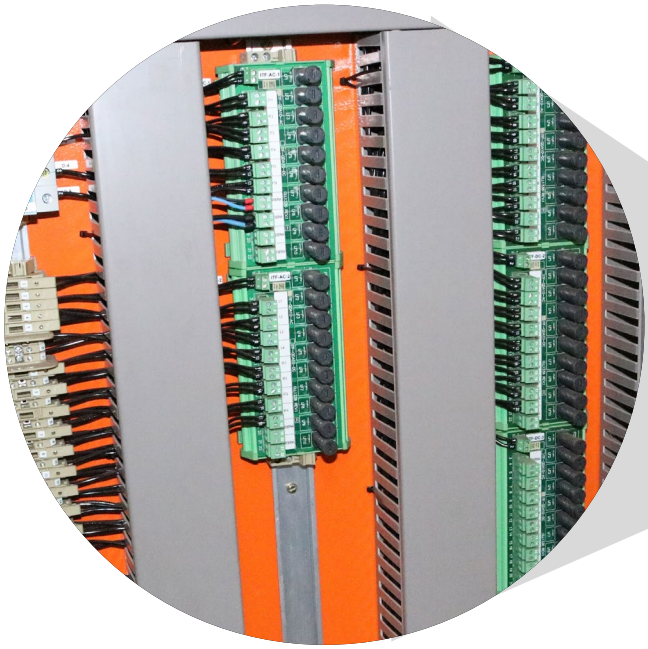
Today, there is a growing trend in the process industries to shorten the period required for executing projects and starting up plants. Experience shows that in the commissioning stage, it is common practice to involve several primary suppliers in discussions regarding project scope and responsibilities. Many times, however, the delivery, acceptance and approval of an automation system is impaired by the lack of definition of responsibilities.

The choice of an automation provider capable of supervising most of the project stages avoids potential disagreements that may endanger the success of the undertaking.

To avoid these difficulties, SMAR offers expert Applications and Project Engineering Departments, as well as an Assembly Department that can design and build control cabinets on its own or based on the client's project. We provide complete documentation, including manuals, inspection procedures and checklist, with a view to the acceptance FAT, SAT and SIT tests, compliant to the IEC 62381 standard.

Customer benefits are even greater when you take into account the services provided by our Technical Assistance Department, such as electrical and mechanical installation for field equipment, communication networks, etc.

The high quality and reliability of SMAR products are demonstrated in our cabinet solutions. Our broad experience can be seen in thousands of cabinets in operation worldwide. Let us make your startup and maintenance faster, safer and more reliable.



Training and Support

SYSTEM302, based on the Microsoft Windows platform, provides applications and interoperability with the main digital protocols available in the Industrial Automation market.

Configuration manuals for software, hardware, installation and system maintenance, together with SMAR training modules, enable the user to develop new projects in a clear and dynamic way.

SMAR provides complete packages to meet all your needs, including training, services, maintenance and technical support. Through our worldwide network of business and engineering offices, technical services, system integrators and sales representatives, we are able to provide industry-leading technical services both in the field and via the Internet. This ensures a fast and secure transfer of files and information helping to finalize projects and services without delay.

Training

Training modules cover the basic and advanced aspects of our products, as well as the protocols and technologies applied to the project. Specific training on maintenance or other activities may be conducted at our training centers in Brazil and the United States, or at the customer's own facility. As a qualified provider of industrial automation products and services, SMAR offers trainings to meet different customer requirements:

- Specification and configuration of automation systems and workstations;
- Installation, configuration, operation and maintenance of field devices;
- Basic instrumentation for process control;
- Automatic process control;
- Utilities control;
- Digital technologies and protocols.

Engineering and Project

SMAR has several groups of specialized professionals offering valuable contributions to various types of process control. Our company, with its dual role as system provider and device manufacturer, has comprehensive knowledge about control system selection and installation. Our project teams also specialized in other aspects of systems engineering, such as computers, network infrastructure and wireless devices.

Building your own system

In some cases, users prefer to develop their own automation system and keep their process secret. The high degree of openness and easy of use with SYSTEM302 enables the user to implement the system on their own with SMAR support.

Under this scenario, the user acquires the confidence needed to carry out maintenance and future updates. They can also realize initial savings that may be expanded from time to time. Consequently, the user is better positioned to solve possible difficulties, always counting on SMAR's recognized technical assistance on a periodic basis.

Most customers prefer a complete SMAR solution when acquiring their initial SYSTEM302. However, SMAR also partners with integrators in various regions throughout the world who can engineer and support SYSTEM302 installations on a local basis. In most cases, the best approach is to let SMAR's experienced team oversee the initial project and commissioning, while the customer handles system installation and maintenance.

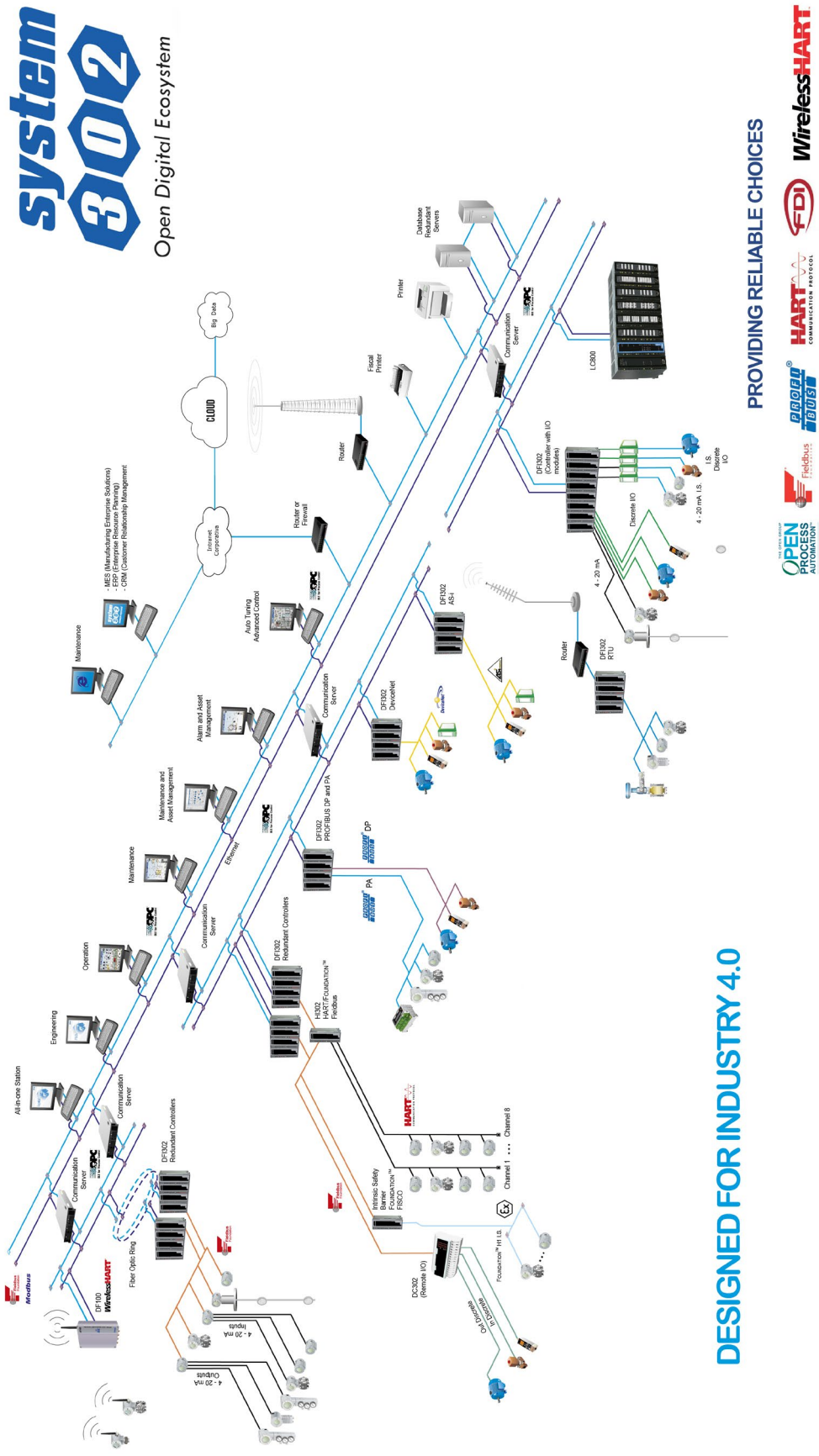
A SMAR project group can supervise the entire job, starting from the basic system engineering.

Preparation and configuration of operator workstations and the Factory Acceptance Test (FAT) can be done at a SMAR facility under the user's supervision. System Acceptance Tests (SAT) and Field Integration Tests with all the field devices are also available options.

Project Management

SMAR can develop program applications executing measurement, control, logic sequencing and functionality according to instructions provided in user documents. These may include flowcharts, logic diagrams, cause and effect tables, and other descriptive operational papers.

The projects managed by our company are supplied with the complete system documentation, including programs and configurations, connection schemes, cross-reference and manuals.


system 302
Open Digital Ecosystem
PROVIDING RELIABLE CHOICES
DESIGNED FOR INDUSTRY 4.0
CLOUD
Big Data
Internet Corporative
Router or Firewall
Router
Fiscal Printer
Printer
Database Redundant Servers
Communication Server
LC800
DF302 (Controller with I/O modules)
Discrete I/O
I.S. Discrete I/O
4 - 20 mA I.S.
4 - 20 mA
DF302 RTU
DF302 AS-i
DF302 DeviceNet
DF302 PROFIBUS DP and PA
DP
PA
Auto Tuning Advanced Control
Alarm and Asset Management
Maintenance and Asset Management
Maintenance
Operation
Engineering
All-in-one Station
Communication Server
Ethernet
DF302 Redundant Controllers
H302 HART-FOUNDATION™ Fieldbus
Intrinsic Safety Barrier FOUNDATION™ FISCO
Channel 1 ... Channel 8
DC302 (Remote I/O)
FOUNDATION™ H1 I.S.
4 - 20 mA Outputs
4 - 20 mA Inputs
DF100
Fiber Optic Ring
Modbus
WirelessHART
HART
FDI
PROFIBUS
Fieldbus
OPEN PROCESS AUTOMATION

Products and Solutions Portfolio

Measuring Instruments, Actuation and Control,
Systems and Solutions, Accessories, Technologies,
Didactic Products.

PROVIDING RELIABLE CHOICES

HART COMMUNICATION PROTOCOL · FOUNDATION · PROFIBUS · WirelessHART · FDT · FDI · THE OPEN GROUP OPEN PROCESS AUTOMATION™ FORUM

Rua Dr. Antônio Furlan Junior, 1028 - Sertãozinho, SP - CEP: 14170-480
insales@smar.com.br | +55 (16) 3946-3599 | www.smar.com

Contact us