

ANALOG SIGNAL CONVERTERS IF/FI300 SERIES

- Available on FOUNDATION™ fieldbus and PROFIBUS-PA technologies
- Ideal for integrating conventional devices in industrial systems with digital technology
- Universal interfaces between 0 to 20mA or 4 to 20 mA signals and FOUNDATION™ fieldbus and PROFIBUS-PA digital protocols
- Enables remote or local calibration and parameterization in hazardous areas
- Self-diagnostics for asset management
- Project cost reduction through the availability of three independent current channels by converter
- Interoperable with control systems available on the market
- Several Function Blocks available
- Capability for dynamic instantiation of function blocks and master backup with FOUNDATION™ fieldbus technology
- Configuration, parameterization and asset management through engineering tools based on EDDL and FDT/DTM technologies, etc
 - Digital indicator (optional) makes possible configuration through local adjustment
 - Explosion-proof and intrinsically safe
 - Designed to comply with European regulations





Signal Converters



IF/FI300 Series

The IF/FI300 line represents a special group of equipment for system transition that still have conventional instrumentation with analog signals of 4-20 mA or 0-20 mA. Allows up to three analog current signals to be converted to fieldbus signals or up to three control fieldbus signals to be converted to current output.



IF300 Series

Current converters for fieldbus with three channels

The **IF300** line is made up by the **IF302** (FOUNDATION[™] fieldbus) and **IF303** (PROFIBUS-PA) converters. They are equipment that facilitate the integration of conventional 4-20 mA or 0-20 mA analog equipment with automation systems with digital technology. Supports up to 3 analog current signals to be converted into fieldbus signals, through analog input function blocks, thus considerably reducing installation, operation and maintenance costs.

Available on FOUNDATION[™] fieldbus e PROFIBUS-PA technologies.

- Power supply through H1 bus: 12 mA @ 9 a 32 Vcc;
- Digital input signal compliant with IEC 61158-2;
- Analog input signal accepts any values between 0-20 mA ou 4-20 mA, while the conventional equipment are powered by external supply;
- Accuracy: ±0.03%;
- Housing in aluminum or stainless steel 316;
- Configuration via engineering stations through tools based on EDDL and FDT/ DTM or local adjustment;
- Integration with Profibus automation systems through GSD file;
- Explosion-proof and intrinsically safe
- Function blocks:
 - Up to 20 Function Blocks dynamically instantiable for the IF302 with capability of LAS backup master;
 - Physical Block, 3 transducer blocks, 3 Analog Input blocks, 3 Totalizers and 1 display block for IF303 adjustment;
 - Fail-safe functions;
 - Compatible with PROFIBUS Profile 3.





FI300 Series Fieldbus current converters with three channels

The **FI300** line is made up by the **FI302** (FOUNDATION[™] fieldbus) and **FI303** (PROFIBUS-PA) converters. This equipment makes easier the integration of conventional 4-20 mA equipment with automation systems with digital technology. Support up to 3 fieldbus control signals to be converted into 4-20mA current signals. They are available on FOUNDATION[™] fieldbus e PROFIBUS-PA technologies. The converted signals can be used for speed control on frequency converters, valve positioners, electric actuators or any other equipment with 4-20mA inputs.

- Power supply through H1 bus: 12 mA @ 9 a 32 Vcc;
- Digital input signal compliant with IEC 61158-2;
- Three 4-20 mA current outputs, while the conventional equipment is powered by external supply;
- Accuracy: ±0.03%;
- Housing in aluminum or stainless steel 316;
- Configuration via engineering stations through tools based on EDDL and FDT/
- DTM or local adjustment;
- Integration with Profibus automation systems through GSD file;
- Explosion-proof and intrinsically safe;
- Function Blocks:
 - Up to 20 Function Blocks dynamically instantiable for the **FI302** with capability of LAS backup master;
 - 1 Physical Block, 3 transducer blocks, 3 Analog Input blocks, 3 Totalizers and 1 Display Block for **FI303** adjustment;
 - Fail-safe functions.
 - Compatible with PROFIBUS Profile 3.







The converters are used to make the communication between conventional 0-20 mA or 4-20 mA signals with FOUNDATION[™] fieldbus and PROFIBUS-PA digital communication systems.

The adoption of fieldbus systems is backed by a series of advantages, like simplification and reduction of installation, immunity to communication noises, easy reconfiguration, easy access to field information, standardization, interchangeability and interoperability, among others.

If your plant does not have a complete line of equipment with FOUNDATION[™] fieldbus or PROFIBUS-PA technology or even when it is not economical to replace all existing conventional devices, Smar converters with fieldbus signal are a practical solution.

The Smar fieldbus signal converters make possible for your plant or process to benefit from the technological innovations with the least initial investment and more economy, performance and productivity.

FOUNDATION[™] fieldbus

O FOUNDATION[™] fieldbus is a totally digital, open, serial and bidirectional communication system that connects fieldbus equipment such as sensors, actuators and controllers. Fieldbus is a local area network (LAN) for process control automation and instrumentation, with resources for distributing field control through the physical means, in compliance with the IEC 61158-2 standard.

The FOUNDATION[™] fieldbus technology with its capability of interconnecting multiple equipment devices makes possible creating big projects. The function block concept allows programming and visualizing the most complex control strategies, all in a single ambient. Another advantage is flexibility, as the control strategy can be altered without changing the wiring or any hardware modification.

PROFIBUS-PA

PROFIBUS-PA is one of the PROFIBUS variants. It is an open protocol compliant with the DIN 19245 standard. In March 1996 it was incorporated in the EN 50170 standard, which is considered as the European fieldbus standard.

The PROFIBUS-PA physical means complies with the IEC 61158-2 standard.

The advantages provided by the PROFIBUS-PA technology are: reliable information transmission functionalities, variable status treatment, fail-safe system, equipment with self-diagnostics feature, equipment rangeability, high measurement resolution, etc. All this besides economical benefits concerning the installations, such as up to 40% in some cases in relation to conventional systems, maintenance costs reduction (up to 25% in some cases versus conventional systems) and less commissioning and startup time.

The PROFIBUS-PA, PROFIBUS Profile 3, is based on the function block model, which is the manufacturers guarantee for interoperability and interchangeability.









FI302 - FOUNDATION[™] fieldbus converter for 3-channel current

The **FI302** is a converter designed to connect FOUNDATION[™] fieldbus systems to 4-20mA actuators and valve positioners. The **FI302** produces 4-20 mA outputs proportional to the information provided by the FOUNDATION[™] fieldbus network, through analog output function blocks.

FI303 - PROFIBUS-PA fieldbus converter for 3-channel current

The **FI303** is a converter designed to connect PROFIBUS-PA systems to elements like control valves and other final control elements. The **FI303** produces 4-20 mA outputs proportional to the information provided by the PROFIBUS-PA network through analog output function blocks.

IF302 - FOUNDATION[™] fieldbus current converter with 3-channels

The **IF302** is a converter for interface of analog transmitters (0-20 mA and/or 4-20mA) with a FOUNDATION[™] fieldbus. The **IF302** receive typical 4-20 mA and/or 0-20 mA current signals and make them available to a FOUNDATION[™] fieldbus system through analog block function blocks.

IF303 - Current converter for PROFIBUS-PA with 3-channels

The **IF303** is a converter for interface of analog transmitters (0-20 mA and/or 4-20mA) with a PROFIBUS-PA network. The **IF303** receive typical 4-20 mA and/or 0-20 mA current signals and make them available to a PROFIBUS-PA system through analog block function blocks.



IF/FI300 Series

Smar Field signal converters 300 Series is available on the FOUNDATION[™] fieldbus and PROFIBUS-PA Technologies. These equipment are configured through Smar configuration software and also with configuration tools from other manufacturers.

Local adjustment is also available for the 300 series and requires the use of the LCD display.

FOUNDATION[™] fieldbus

The **IF302** e **FI302** converters can be configured by any FOUNDATION[™] fieldbus converter based on EDDL. The Syscon (System Configurator Tool) is a Smar open software used to configure, operate and provide maintenance to field equipment. The Syscon offers efficient and friendly interaction with the user in Windows environment.

Configuration tools as AMS[™], FieldCare[™] and HHT375/475 can be used to configure Smar Series 300 Fieldbus Signal Converters. DD (Device Description) and CF (Capability File) files can be downloaded from the Smar site or the fieldbus FOUNDATION[™] official site.

FOUNDATION^{imesilon} fieldbus converters support complex control strategies, due to their high capability and the variety of instantiable function blocks.

The FOUNDATION[™] fieldbus technology enables asset management systems like the AssetView to access information on status and diagnostics. Therefore, the maintenance procedures became more efficient, providing more plant safety and availability.

PROFIBUS-PA

The **IF303** and **FI303** can be configured by any PROFIBUS-PA configurator based on EDDL (Simatic PDM) or FDT/DTM (AssetView, FieldCare, Pactware, etc).

The ProfibusView is a Smar software used to configure, operate and provide maintenance on field equipment.

The PROFIBUS-PA allows that quality and diagnostics information to be provided in a friendly way, improving plant management and maintenance. Device Description (DDL), Device Type Manager (DTM) and General Station Description (GSD) can be downloaded from Smar site.

The PROFIBUS-PA technology enables the AssetView to access status and diagnostics information. So, the maintenance procedures become more efficient, providing more plant safety and availability.

Smar developed the AssetView, a tool for the Ethernet environment, based on the EDDL and FDT/DTM Technologies. The AssetView offers a friendly interface that can be accessed anywhere, anytime, with the use of an Internet navigator. It was projected for the management of field devices diagnostics, as an auxiliary for corrective, preventive, predictive and proactive maintenance.







FOUNDATION[™] fieldbus: IF302 & FI302



PROFIBUS-PA: IF303 & FI303



* external sources powering the 4-20mA equipment were suppressed to simplify the design.





Function Specifications

Communication Signal	Only-digital Fieldbus compliant with IEC 611258-2 (H1): 31,25 kbit/s and voltage mode with power supply through bus.							
Input Signal	IF300 Up to three 0-20 mA channels, 4-20 mA or any other value of current between 0 and 20 mA. Protected against reverse polarity. The 0-20/4-20 mA devices must be powered by external power supply.							
Analog Output Signal	FI300 Three 4-20 mA current outputs with external power supply, common ground.							
Input Impedance	IF300 Resistive 100Ω, plus 0.8 V of fall on the protection diode.							
Power Supply	Power through 9-32 Vdc bus. 12 mA quiescent consumption current.							
Output Impedance	Output impedance: non-intrinsic safety of 7.8 kHz to 39 kHz must be higher or equal to 3 K Ω . Intrinsic safety output impedance (assuming an IS barrier on the power supply) of 7.8 kHz to 39 kHz must be high or equal to 400 Ohm.							
Output Load Limit	FI300 External Output Voltage: 3-45 Vdc.							
Indicator	LCD Indicator of 4 ¹ / ₂ dígits.							
Classified Area Certification	INMETRO Certification for Intrinsic Safety, Explosion Proof and Protected by enclosure, ATEX for Intrinsic Safety, Explosion Proof, and IECEx for Fireproof Explosion. Designed to comply with European Directives (Directives ATEX 2014/34//EU, LVD 2014/35/ EU, ROHS 2011/65/EU, and EMC 2014/30/EU)							
Temperature Limits	Operation: -40 to 85 °C (-40 to 185 °F); Storage: -40 to 85 °C (-40 to 185 °F); Display: -20 to 80 °C (-4 to 176 °F) in operation; -40 to 85 °C (-40 to 185 °F) without damages.							
Humidity Limits	0 to 100% RH.							
Operation start time	Approximately 10 seconds.							
Update Time	Approximately 0.5 second.							
Configuration	The basic configuration can be made with the magnetic screwdrive for equipment with display options. IF302 & FI302 They are fully configured via Syscon using SYSTEM302 or any FOUNDATION™ Fieldbus configuration tool. IF303 & FI303 They are fully configured using SYSTEM302 or any PROFIBUS-PA configuration tool based on EDDL and FDT/DTM.							



IF/FI300 Series

Performance Specifications

Exactness	IF300 0.03% of span for 4-20 MA, 5 μA for other spans. FI300 0.1%.					
Ambient Temperature Effect	For a variation between 10 °C: ± 0.05%.					
Output Power Source Effect	FI300 ± 0.005%/V.					
Vibration Effect	Complies with SAMA PMC 31.1 standard.					
Eletromagnetic Interference Effect	Designed to comply with European Directive EMC 2014/30/EU.					

Physical Specifications

Electrical Connection	¹ ⁄ ₂ -14 NPT, PG 13.5 or M20 x 1.5.
Material of Construction	Injected aluminum, with low copper content and polyester paint finishing, or stainless steel 316, and cover with Buna N gaskets.
Mounting	With the use of an optional mounting bracket, it can be installed on a 2" pipe fixed to the wall or panel.
Weight	Without the LCD display and the mounting bracket: 0.80 kg. Additional LCD display: 0.13 kg. Additional mounting support: 0.60 kg.





IF300

MODEL	си	RENTE CONVERTERS FOR FIELDBUS WITH THREE CHANNELS													
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H0 Aluminum (IP/TYPE) H1 316 Stainless Steel (IP/TYPE) H2 Aluminum for saline atmosphere (IPW/TYPE X) H3 316 Stainless Steel for saline atmosphere (IPW/TYPE X) H4 Aluminum Copper Free (IPW/TYPE X)								//TYPE X) here (IPW/TYPE X))							
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FI300

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IF/FI300 Series



NOTAS / NOTES: AS DIMENSÕES SÃO EM mm (POLEGADAS) DIMENSIONS ARE IN mm (INCH)



IF/FI300 Series







IF/FI300 Series Analog Signal Converters



Contact us



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